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Descriptive data were collected in the form of program case histories, student and teacher surveys and interviews, and school records from eight schools (1966-67) and two schools (1967-68) that were conducting Richmond Plan type programs for average underachieving secondary students. In writing this evaluation, two major questions were asked, namely, "What are the impacts of the Richmond Plan on its students and on the school?" and "What information can be developed that would be useful to schools that are interested in introducing such a plan?" Profiles derived from the case histories are presented for 10 high school programs, and provide a description of the origins, early problems, operation, and major problems of each program. A comparative analysis is made on three issues: (1) effects of these programs, (2) awareness of and attitudes toward the programs, and (3) costs. Administrative guidelines are presented for those considering the implementation of such a program. The findings are discussed in general terms as strengths and weaknesses of the several program variations. The appendix includes the questionnaires and tabular listings of frequency data. (EM)

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SUMMARY

General Background

This report concerns an evaluation of a major educational innovation called the Richmond Plan. This is a generic term covering several innovations (e.g., programs in preengineering technology, foods, paramedical). The major goal of the Richmond Plan is to reclaim the average and often underachieving student in high school. As originally conceived, the program was not designed for the potential dropout nor for the educationally disadvantaged student. However, there have since been adaptations of the program to fit the needs of these students.

The major innovative aspect of the Richmond Plan is an interdisciplinary teaching team usually composed of teachers in Mathematics, Science, English, and Industrial Arts. The subject matter is related through the focus on practical application projects in the shop or laboratory. The teaching team in the Richmond Plan is not team-teaching in the usual sense of that term; rather, the teachers have their own classes but work together as a team in planning and operating the program. An example of an RP unit is the pinhole camera project. A camera is constructed in the laboratory or shop and used as a vehicle to interrelate the subject matter of Mathematics, Science, and English.

The first Richmond Plan was installed in the Richmond Unified School District in northern California in 1962. The program received a large amount of publicity, resulting in a rapid diffusion of the experiment throughout the country. At that time, there was no reliable evidence concerning its effectiveness.

The Office of Education, aware of the wide-spread interest in the Richmond Plan, decided that an evaluation would be useful. Stanford Research Institute undertook the study, beginning work in late 1966, four years after the first program had begun.

Objectives

The general purpose of the SRI evaluation was to develop information useful to those wishing to assess the worth of the Richmond Plan. The following specific objectives guided the evaluation:

1. To describe and analyze the critical events and processes leading to the decision to introduce a Richmond Plan in selected Bay Area secondary schools.

2. To develop, on the basis of the above analyses, guidelines useful to other school systems in introducing the Richmond Plan.

3. To collect and analyze existing data bearing on the effectiveness of the plan as reflected in the behavior of the participating students and faculty and the effects on other programs within the sponsoring school system.

4. From the analyses, to develop a set of preliminary conclusions concerning the outcomes of existing instances of the Richmond Plan.

5. To develop, if needed, a design for continuing evaluation of the Richmond Plan.

Method of Approach

This evaluation, prompted by urgent requirements for information about the Richmond Plan, began several years after the experiment was first implemented. The basic strategy of the research under these less-than-ideal conditions was to reconstruct as accurately as possible what the innovators were trying to accomplish, by what means they were accomplishing it, and how well the system was working. The evaluation relied primarily on the analysis of 10 programs that were in operation at the time the study was made. Additionally, extensive surveys were made of alumni of the program and their parents.

For all current and alumni students and their parents, a comparison group was selected to be as similar as possible to the RP counterparts.

Two broad classes of information were developed. The first is the case history, derived from a wide variety of sources (e.g., documents, interviews, and statistics). A case history was made for each of the 10 programs included in this evaluation. The essential ingredient of the case history was "living" with the school long enough to develop a good working relationship with the students, teachers, counselors, and administrators involved. The second class of information was derived largely from questionnaires, surveys, and interviews with students and teachers as well as from available statistical materials. The specific procedures used in data collection included (1) observation of classes, (2) personal interviews, (3) telephone interviews, (4) questionnaire surveys, and (5) statistical records from school files.

Results

In Section II each of the 10 programs is presented in historical narrative form, starting with the story of its introduction and ending with a prediction for its future. The 10 program profiles are organized into the following major divisions:

1. Origin of the Program. (pre-existing conditions, evolution of the program)

2. Operation of the Program. (objectives, students, teachers, curriculum, counseling, administration)

3. Outlook for the Future.

Section III presents a school-by-school analysis of the major effects of the 10 programs and the costs associated therewith. Included are reactions of current and alumni students, their teachers, and their parents; analysis of differences between RP and comparison group (CG) students; and effects on other programs. Also considered are awareness of and attitudes toward the 10 programs by general faculties and student bodies.

Major factors to consider in introducing an RP program are the innovative aspects of the program, e.g., student selection, team teaching, the curriculum, the counseling function, and the reactions of the faculty. A suggested strategy of innovation is outlined for administrators interested in implementing an RP program in Section IV.

Conclusions

Analysis of the effectiveness of the RP programs shows wide variation across schools. There are distinct clusters of schools which, by several criteria of effectiveness, are operating successfully. But there are other clusters in which the schools are operating very ineffectively. In the successful schools it is clear that the students in experimental programs are highly satisfied with their programs and feel they are deriving benefits from it. There is a consistent tendency for these experimental students to get more out of their high school experience than their comparison group counterparts. The RP graduates fared as well or better than their comparison group counterparts in their post-high school careers; however, the alumni survey was indicative rather than conclusive.

The evidence also suggests that a Richmond Plan can help to create a climate conducive to change and experimentation in a school. Additional experimental curricula have often evolved when an RP program has been established within a school.

The bulk of the evidence suggests that the RP program that is properly planned, organized, and operated can provide a substantially improved educational experience for average high school students.

The decision as to whether to seriously consider introducing an RP-type program in a school rests primarily on the seriousness of the problems faced by the average and often under-achieving student within the school. If the nine schools studied in this evaluation are at all representative, there is no doubt about the large number of students in need of improved instruction.

The Richmond Plan turns out to be not one but several simultaneous innovations, including changes in goals, student selection, teaching, the curriculum, and the counselors. It is therefore an extremely complex learning innovation to introduce into a high school. However, the evidence of this study suggests that a program can be established and operated successfully, provided that sound planning and observation of some of the major problems connected with the program are observed.

The inferior status often attributed to the RP approach when compared with College Preparatory programs is an extremely serious and persistent problem.

Recommendations

The Richmond Plan as currently conceived can only accommodate in a single program a maximum of 60 students at one time, including the junior and senior classes, even though most comprehensive high schools in the United States have considerably more students who could benefit from approaches like the Richmond Plan. Attention should be given to modifications of and alternatives to the Richmond Plan so that more students could be served.

A successful RP experiment depends primarily on the commitment of the teaching team, but the demands on most teachers are probably too great to be sustained over a long period of time. This problem deserves further study. The experimental RP teacher training program at San Francisco State College is a promising development in this direction.

More intensive efforts should be made to study graduates of the program to determine conclusively over time what effects the RP approach has on the careers of its graduates.

More needs to be known about the diffusion of the RP approach to schools throughout the country.

The feasibility of a national center to collect, analyze, and disseminate information about the Richmond movement should be investigated.

I INTRODUCTION

General Background

This report concerns a major educational experiment, the Richmond Plan,[*] aimed at the improvement of high school programs for junior and senior students of average ability. Many of these students are not achieving up to their potential in high school, are drifting with no apparent goal, receiving poor grades, and are seemingly unable to see the relationship of their high school experience to the real world around them. They can be expected to have difficulty both in completing school and in making the transition from school to the labor force. Further, these difficulties are being rapidly compounded by surging technological change, a labor market that demands high levels of skill and education, and the fact of generally high unemployment levels for workers in the lesser skilled jobs. The Richmond Plan is an attempt to supply a solution to this problem by stimulating student interest in and providing motivation for learning, and by developing realistic occupational and educational goals.

In the late 1950's, a group of educators in the Richmond Unified School District (RUSD) in northern California began to formulate their ideas concerning new programs for these average high school students. Conditions were advantageous for such experimentation at this time. Russia's Sputnik had awakened much interest in scientific education. It was a period of unrest within academic circles, with a stir of activity to find something new and different in curriculum reforms. Whole subject matter areas were revised. However, many of these curriculum reform movements were intended to benefit the academically inclined youngster who might become a mathematician or a scientist in the new generation that would put us ahead in the scientific race. There were fewer reformists giving serious thought to the average student, many of whom were falling behind in the upgraded and intensified, scientifically oriented programs.

The Richmond Plan is regarded as a major experiment in curriculum reform, not so much because its elements are new or revolutionary, but more because it advocates a strong concern for the average student.[†]

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[*] The Richmond Plan, is a generic term covering several educational changes, e.g., programs in pre-engineering technology, foods, business, and health. The National Science Foundation has recently provided a grant to support the development of a Richmond Plan approach for high school programs designed to prepare students for medical occupations.

[†] There is a sizable literature on the shortcomings of high school programs for students in general and for the average student in particular. The

As originally conceived, the program was not designed for the potential dropout nor for the culturally or educationally disadvantaged student. However, there have been adaptations of the program to fit the needs of these students. It is basically a recombination of familiar education elements designed as a practical alternative to the College Preparatory program at one extreme and to the "general" programs at the other. The Richmond Plan concerns interdisciplinary planning and related learning sequences in several fields of study. A principal innovative aspect of the program is an interdisciplinary teaching team, usually composed of teachers in Mathematics, Science, English, and Industrial Arts. These traditional high school subjects are interrelated through the focus on a practical application project in the shop or laboratory. The Richmond Plan does not involve team teaching in the usual sense: the teachers have their own classes, but they work as a team, planning for the course and its operations. The students attend all RP classes together. To accomplish their team purposes, the group meets several times a week, ideally, to discuss issues and problems as they arise. (See Section II for a more detailed discussion of RP objectives and procedures.)

An illustrative example of an RP unit is the pinhole camera project. The camera is used as a vehicle to interrelate and integrate the material taught in Mathematics, Science, English, and Technical Laboratory. This unit first involves the construction of the camera in the shop or laboratory. In the Science class, the unit is furthered by instruction, for example, on defraction and diffusion of light and the chemistry of film exposure and development. In Mathematics, the geometry of optics may be taught, while in English the relevant vocabulary is stressed and a report prepared on the entire project. Ideally, this unit would be accompanied by field trips to local industries concerned with photography and related fields. Guest speakers would be brought in to stress or highlight certain aspects of the industry. Throughout this whole unit, the teachers would be meeting frequently to discuss progress and problems encountered with the unit or with particular students.

Massachusetts Institute of Technology Summer Study in 1965 focused squarely on the failure of the high school to serve the needs of the "gray area" students--those 80 to 85 percent who do not go on to graduate from college (N. H. Frank, Report of the Summer Study on Occupational, Vocational and Technical Education, July 6-August 13, 1965, Massachusetts Institute of Technology, p. 27ff.) A large research literature can be found on the subject of underachievement alone (Jane Beasley Raph, Miriam L. Goldberg, and A. Harry Passow, Bright Underachievers, Teachers College Press, Teachers College, Columbia University, New York, 1966). The strident criticism of American education is typified by the work of Friedenberg and Goodman (Edgar Z. Friedenberg, The Dignity of Youth and Other Atavisms, Beacon Press, Boston, Mass., 1965; Paul Goodman, Compulsory Mis-education and the Community of Scholars, Vintage Books, Random House, Inc., New York 1965).

After extensive initial planning, the Richmond Plan was installed for the first time in two RUSD schools in September 1962. (See Section II for a more detailed description of the events leading up to the installation of the two programs.) By the spring of 1963, the program was receiving enormous publicity. Advance reports of its alleged success appeared in such national, mass-circulation magazines as Readers Digest (May 1963). By 1965, more than 15 high schools in the Bay Area had implemented the program. There was at this time a great deal of academic and lay sentiment that the RP concept was sound and that it seemed to be working effectively. There was little evidence to support this view, however.

The U.S. Office of Education, aware of the widespread interest in the Richmond Plan, decided an evaluation would be useful and asked Stanford Research Institute to design such a study. Subsequently, a grant was made to SRI for the study, work on which began in late 1966, four years after the first RP classes had begun.

Objectives

The broad purpose of the SRI study was to develop information useful to those who wish to assess the worth of the Richmond Plan. Accordingly, the following specific objectives have guided the conduct of the research:

1. To describe and analyze the critical events and processes leading to the decision to introduce the Richmond Plan in selected Bay Area secondary schools. Particular attention was paid to the effects of the Richmond Plan on the systems into which it was introduced, to the strategies and tactics employed in its introduction, to the means by which information about the program was disseminated, and to the key persons, groups, and organizations involved in the introduction and implementation of the program.

2. To develop, on the basis of the above analyses, guidelines useful to other school systems in introducing the RP concept.

3. To collect and analyze existing data bearing on the effectiveness of the plan as reflected in the behavior of participating students and faculty, and the effects on other programs within the sponsoring school system.

4. From the analyses, to develop a set of preliminary conclusions concerning the outcomes of existing instances of the Richmond Plan, and of the RP concept in general.

5. To develop, if needed, a programmatic design for continuing, long term evaluation of the RP concept.

Method of Approach

This evaluation began as a result of urgent requirements for information about the RP movement. This urgency was the justification for risking an evaluation of an extremely ambitious, complex, and elusive experiment in secondary education that was already four years in operation. The title of this report (which was the title of the proposal on which the study is based) stresses "preliminary" because of the extremely difficult research obstacles that had to be faced in attempting to obtain useful and practical results at such an advanced stage of the experiment.

Evaluation Strategy

Under these less-than-ideal conditions, the only reasonable approach was to reconstruct as accurately as possible what the RP innovators were trying to accomplish, by what means they were accomplishing it, and how well the system was working. The following comment, which was discovered after all our data were in, fairly well typifies the approach that was actually taken in the study:

> The purpose of education evaluation is expository: to acquaint the audience with the workings of certain educators and their learners. It differs from educational research in its orientation to a specific program rather than to variables common to many programs. A full evaluation results in a story, supported perhaps by statistics and profiles. It tells what happened. It reveals perceptions and judgments that different groups and individuals hold--obtained, I hope, by objective means. It tells of merit and shortcomings. As a bonus, it may offer generalizations ("the moral of the story is...") for the guidance of subsequent educational programs.[*]

This evaluation relied heavily on the analysis of "current" programs (those in operation at the time this study was made--the school year 1966-67 for eight schools and 1967-68 for two schools). This reliance was necessary if any in-depth understanding was to be obtained about the Richmond Plan.[†] Although the processes of ongoing programs received the major amount of attention, extensive surveys were made of alumni of the programs and their parents. These surveys focused on the post-high school activities of alumni and the usefulness of high school programs therefor.

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[*] Robert Stake, Chapter in Tyler, R. W., R. Gagne, and M. Scriven, Perspectives of Curriculum Evaluation, AERA Monograph Series on Curriculum Evaluation, Vol. I, Rand McNally & Co., Chicago, Ill., 1967, p. 5.

[†] A similar problem in research design was faced by Jahoda in an evaluation of a British technical educational program at the college level (Marie Jahoda, The Education of Technologists, Tavistock Publications, London, 1963). She provides a detailed justification for attending to ongoing educational processes in evaluation studies (see Chapter 1, especially pp. 10-16).

For all current and alumni students and their parents (with a few exceptions to be noted later), a comparison group was selected to be as similar as possible to their RP counterparts. They were selected by the teachers and counselors in the 10 schools, using criteria as nearly as possible identical to those used in the RP programs. (See Appendix B, Table B-1 for selected descriptive characteristics of RP and CG students.)

Two classes of information were developed. The first is the "case history," derived from a wide variety of sources (e.g., documents, interviews, and statistics). A case history was made for each of the programs included in this evaluation. The essential ingredient of the case history was "living" with the school long enough to develop a trustful working relationship with the students, teachers, counselors, and administrators. Once this relationship was established, it was possible to understand a particular experimental program in a fairly short period of time. The result of the "living-in" period was a large amount of qualitative information, much of which was in the form of transcriptions of tape-recorded interviews. The end product was a profile of each experimental program studied, presented in Section II.

The second class of information was derived largely from questionnaires, surveys, and interviews with students and teachers, as well as from available statistical material. This information is for the most part presented in a comparative context, utilizing differences among schools as a means of analysis. (See Appendix A for survey specifications.)

In addition to measurements made on those directly concerned in the Richmond programs, surveys were made of the non-RP students and faculty in each school. These were designed to establish the awareness of, knowledge about, and attitudes toward the experimental programs of those not directly concerned.

Three other sources of information were considered but not employed. The first was the standardized achievement test. It was impractical because of lack of time and resources to order and administer the tests. Moreover, consultation with RP teachers suggested that other measures would be more valuable since the Richmond Plan was not designed primarily to increase performance on achievement tests. Data on school-leaving was the second information source considered, but was immediately rejected because of the gross inadequacies of the available statistics. The third was the psychological inventory. This was not pursued because administrators in the schools that were studied advised that certain questions in some inventories were highly personal and might lead to parental objections.

Data Collection Procedures

The first step in the research was to interview persons who had been prominent in the development of the RP concepts. Simultaneously, observations were made of RP classes in one of the schools in the RUSD. These early activities set the broad design for all the work to follow.

Primary sources of information were the 10 RP programs in nine Bay Area high schools (one high school had two programs).* The criteria for selection of schools and programs included the time at which the program started, the community setting of the school, and the county and school district involved. The schools represent four separate school districts. The schools in the sample are the only ones with RP programs in those districts. Therefore, the district is a unit for analysis, as well as the student body, the teachers, and the school. Where the county plays a significant role, it is also a unit for analysis.

The specific procedures used in data collection include:

1. Observation of classes
2. Personal interviews
3. Telephone interviews
4. Questionnaire surveys
5. Statistical records from school files

Class Observation. In the exploratory work, classes were observed for a total of two months, with primary emphasis being the continual observation of one RP senior class for a month. In subsequent studies of the remaining schools in the sample, classes were observed for two weeks, i.e., one week for the junior class and one week for the senior class. In two programs (Watsonville Paramedical and San Lorenzo Valley Business), circumstances prohibited an observation for a full week; in other programs the observation period was substantially longer. Experience showed that only by observation of this kind could sound knowledge of what is really going on in a program be developed. It was expected that the teachers and students would not behave in a natural way under observation, but the actual research experience was that after a day or two the students paid little attention to the observers.

Personal Interviews. The second major source of data was the personal interview. These were conducted throughout the study. In connection with the case studies of schools, personal interviews were obtained with each RP teacher, each counselor involved in the program, each principal, and in most cases the instructional vice principal; county and school district staff members were also interviewed. In all, about 100 interviews were completed. In addition, there were informal talks with students, teachers, and administrators. Group interviews with students were utilized wherein the RP class met (without school personnel present) and an informal discussion concerning the program and what they thought of it was tape-recorded.

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* See Table I in Section II for a chart showing selected information on the schools included.

Telephone Interviews. These were obtained with the alumni of the program and their parents. This included both the RP graduates and the members of comparison groups corresponding to these graduates. Telephone interviews were also conducted with the parents of current students and alumni, both RP and comparison group. In all, about 900 telephone interviews were obtained.

Questionnaire Survey. These surveys were conducted in each of the case study schools and included 315 questionnaires returned from current RP students, 450 from current comparison groups students, about 3,500 from the general student body, and about 300 from the general non-RP faculty.

Statistics. The statistical material that supports the findings of this report includes the Academic Record Card (ARC), which covers the grades and courses taken by the student; the IQ and other standardized tests that were administered to the students; and attendance records.

Limitations of the Research

One limitation of this study has been suggested already--beginning the study four years after the innovation first started. Other major limitations must be emphasized so that proper caution will be exercised by readers who may wish to use the results for planning purposes.

First, the complexity of an experiment like the Richmond Plan is awesome. A thorough understanding of it and its impacts are dependent on a large number of factors and variables that interact in complex ways. Only the major elements of the total picture can be sketched in at this time. For example, the problem of student underachievement alone has been the subject of serious attention by educational researchers for several years, yet underachievement remains a poorly understood phenomenon.

Second, the study of the effectiveness of the programs in terms of student behavior was limited by several factors. In the case of the students in the program at the time of the study, there was no opportunity to take measurements before their selection for the RP programs. Therefore, reliance was on retrospective measures for critical indicators of change (a decidedly second-best alternative). The study of alumni of the program was necessarily restricted to a few variables that were amenable to the telephone questionnaire survey procedure. Obviously, studies in depth are required to determine systematically the impact, if any, on the graduates of the Richmond programs.

Third, although most schools used specific criteria for selection of students, intuition and judgment played a major role. This uneven quality of the selection process meant in turn that the comparison group selection process was equally uneven.

II PROFILES OF THE TEN PROGRAMS

Introduction

Major educational reforms can be dramatic and exciting. This section attempts to capture some of the drama and excitement in nine schools that introduced the Richmond Plan, beginning with the invention of the innovation itself.

Origin of the Richmond Plan

The early development of the Richmond Plan was the result of a collaborative effort that involved several staff members in the RUSD high schools (primarily Harry Ells and De Anza) and a teacher from Cogswell Polytechnic (a two-year, college-level technical school). These people set in motion a curriculum reform movement that was to achieve extremely rapid recognition and diffusion. Intense dissatisfaction with high school programs for the average student was the primary stimulus for this innovation. As a counselor from Harry Ells High School said:

> One of the first things that came to mind among those of us who were involved in its early beginnings was to find some way that these students who did not seem to be doing too well in the College Preparatory program could have something else to do. For we had an unwritten law in our school guides on administrative procedures that, if...[a student] got a D in one subject, and it was a sequential program, that...[he] could not go on to the next higher subject...
>
> We did not feel that the Industrial Arts program as such offered...the kind of challenging material that these kids should have or the kind of curriculum that would give them a broader background whereby they could make some decision as to what they could do after they got out of high school.
>
> And I think this was our first intent, because as a counselor then I was concerned with the fact that these juniors after finishing Geometry could not go into Chemistry and could not go into Algebra II. What could they go into? Industrial Math? Business Math? To me these courses lacked the vigor or the looking ahead to the future. I didn't see a close relationship to what these boys wanted to do.

In 1960, working closely with the Cogswell educator, the Ells counselor and his colleagues submitted a proposal for an interdisciplinary course of instruction to a curriculum committee of the RUSD. It was not accepted. A second proposal, developed by both Ells and De Anza staffs, was also not accepted. It might have been that the whole experimental effort would have stopped at this point had it not been for the persuasiveness of the Cogswell educator. He is generally acknowledged to have played one of the key roles in gaining acceptance and funding for the Richmond Plan. Even though he was an exceptionally persuasive educator, it was only after approaching several foundations that at last a receptive audience was found. A grant made by the Rosenberg Foundation of San Francisco enabled the group to mount a six-week summer workshop in 1961. As the director of the Foundation stated:

> Our interest was sparked initially by the personal qualities of Mr. ; we were most impressed with his enthusiasm, commitment, and sincerity. We saw what appeared to be an excellent combination: a technical institute and a nucleus of dedicated high school teachers who were truly interested in student welfare. We thought the area was open for innovation and that the concept might help in filling the educational gap for the average youngsters who have been neglected.

After this workshop, intensive planning proceeded throughout the year. Another grant was awarded for a second workshop in the summer of 1962, which saw the final program designed and ready for its trial at both Ells and De Anza high schools.

The two Rosenberg Foundation grants were most important to the Richmond movement. The relatively small grants of money had large symbolic implications. They provided greatly needed recognition, encouragement, and status to the innovative group, to their schools, and to the district leadership. There is some doubt that the movement could have survived the adversities of the early years without the grants; certainly the impetus provided was vital.

In 1963, the Ford Foundation made a grant to Cogswell Polytechnic to test the feasibility of the innovation by demonstration in eight additional Bay Area high schools and in the following year a second Ford grant established the Center for Technological Education (CTE) at San Francisco State College. CTE's broad objectives were to: (1) disseminate information, (2) introduce it into more schools, (3) provide liaison between schools, and (4) set up an experimental teacher training program at San Francisco State with primary emphasis on the RP method of teaching.

Since 1964, seven additional engineering technology programs have been started, making a total of 17 now in operation. The interdisciplinary approach has been introduced into at least six other subject areas, viz., food, pre-aeronautics, business, graphics, paramedical, and construction technology. The foods program (FEAST) was initiated through a Ford grant to San Francisco City College, and was later supported by the California State Department of Education. About 15 programs are now operating in these areas. Additionally, 11 paramedical programs are in the formal design stage. Sixteen additional schools are planning other programs. This makes a total of approximately 60 programs at various stages of operation or development in California. The interdisciplinary concept has spread to other areas of the United States, including Florida, Massachusetts, Michigan, Mississippi, New Jersey, New York City, Oregon, and Wisconsin. A rough tally shows that over 800 inquiries were received by the RUSD, the CTE, and Cogswell Polytechnic Institute. Many foreigners also visited the Bay Area program, including representatives from Australia, Germany, Israel, Lebanon, Liberia, Peru, and Yugoslavia.

There was much variation in statements made about the goals of the Richmond Plan in the early innovative years. There seemed to have been nearly as many specific objectives as innovators. This was probably to be expected since the innovators were grappling with an ambitious reform that sought to alleviate a grave weakness in the high school--shortchanging the average student. The RP doctrine, however, suggests that the following were, and continue to be, basic operational objectives:

1. To present instructional material at the interest level of the student.
2. To relate the theoretical and the practical so they are mutually reinforced.
3. To provide all possible individual attention to the student.
4. To give the student a reasonable say in what happens to him.
5. To optimize the chances of student success.
6. To make high school relevant to the real world.

There was consensus on the anticipated outcomes for the students. These have been summarized by one of those concerned in the early development of the plan:*

1. Each student accepts the responsibility for his own learning.
2. The student sees the reason for learning.
3. Each student feels his teachers have a genuine concern for his learning.

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* Emmett O'Neill, "A Study of the Validity of Procedures Employed in Selecting the High School Students for a Pilot Pre-Technician Program," Master's Thesis, San Francisco State College, July 1967, p. 43.

4. The student feels he has some control over his learning environment.

5. Each student manifests a change for the better in his attitude toward school and learning.

6. Each student develops realistic educational and vocational goals.

The following is a list of standards by which the teaching team was guided:*

1. There must be a spirit of harmony and cooperation existing within the group and with the administration.

2. Members of the teaching team must agree upon and be fully aware of the overall objectives of the program.

3. Collectively and individually, the team members must assume responsibility for the success or failure of the program.

4. Each and every member of the team must participate in the planning of the curriculum as well as in planning the details of his own subject matter contribution to the learning process.

5. Each teacher must be flexible and resourceful in adapting his methods and procedures to the needs of the individual and the group, as these needs manifest themselves.

6. Each member of the team must be committed to the practice of appraising and studying each member of the class in order to help the student realize his unique potential in the program.

The methods of selecting students varied widely from school to school. However, the following general procedure was commonly employed:

1. Screen the records for students who had taken Algebra in the ninth or tenth grade. A passing mark was preferred, but even less than passing marks were at times acceptable.

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* Ibid., p. 43.

2. Of those who had taken Algebra, screen out those "succeeding" in their programs. This was a somewhat artistic decision, based on a combination of grades and other material from the records, augmented, as needed, by conversations with other teachers, the counselor, or the student himself.

3. Of those remaining, the typical procedure was to review the records again, with particular emphasis on aptitudes, I.Q. (usually between 90 and 115), and grade point average. In the final decision, personal knowledge of a student and his idiosyncracies often tipped the balance one way or the other.

The 10 program profiles* are organized into the following major divisions:

1. Origin of the Program. (pre-existing conditions, evolution of the program)

2. Operation of the Program. (objectives, students, teachers, curriculum, counseling, administration)

3. Outlook for the Future.

The account begins with the origin of the Richmond Plan in the RUSD and its trial in two Richmond schools. This is followed by the "first generation" of diffusion from one to two years later (El Cerrito, Richmond, Pacific, and Cubberley high schools). About two years later the "second generation" of diffusion took place (Palo Alto, San Lorenzo, and Watsonville high schools). (See Table 1 for a list of the schools and their characteristics.)

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* Each profile was reviewed by a member of the program teaching team or an administrator in the school. The reviewer was asked to check (1) for factual accuracy and (2) for completeness.

Table 1

SELECTED TEN RP PROGRAMS

Name and Type of Program	Name of High School	School District	County	Year of Program Initiation	Type of Community	Socio-Economic Status
"PreTech"-Pretechnical. Based on original doctrine	Harry Ells	Richmond Unified	Contra Costa	1962	Urban-industrial	Low
"PreTech"-Pretechnical. Based on original doctrine	De Anza	Richmond Unified	Contra Costa	1962	Suburban	Medium
"PreTech"-Pretechnical. Based on original doctrine	Richmond	Richmond Unified	Contra Costa	1964	Urban industrial	Low
"PreTech"-Pretechnical. Based on original doctrine	El Cerrito	Richmond Unified	Contra Costa	1964	Suburban	High
"PreTech"-Pretechnical. (broad, traditional Richmond approach)	Pacific	San Leandro Unified	Alameda	1963	Urban-industrial	Medium
"Tech-Prep"-Pretechnical. (broad, traditional Richmond approach)	Cubberley	Palo Alto Unified	Santa Clara	1963	Suburban	Medium
"GREAT"-Graphic Reproduction, Education, and Technology	Palo Alto	Palo Alto Unified	Santa Clara	1966	Suburban	High
"PreTech"-Pretechnical. (broad, traditional Richmond approach)	San Lorenzo	San Lorenzo Valley	Santa Cruz	1966	Rural-resort	Medium
"MDSE"-Merchandising, Distribution, Sales Education	San Lorenzo	San Lorenzo Valley	Santa Cruz	1967	Rural-resort	Medium
"HOPE"-Health Occupations Preparatory Education program	Watsonville	Pajaro Valley	Santa Cruz	1967	Rural-agricultural	Low

RICHMOND UNIFIED SCHOOL DISTRICT

- Harry Ells High School
- De Anza High School
- Richmond High School
- El Cerrito High School

RICHMOND UNIFIED SCHOOL DISTRICT

General Background[*]

Richmond, California, located in western Contra Costa County on the northeast shore of San Francisco Bay, is considered part of the Bay Area metropolitan complex. Its population at the time of this study was 80,450, but the surrounding area included approximately 170,000 persons.

The present industrial climate that typifies Richmond had its origin in 1902 when the Standard Oil Company located its refinery there; by 1904, this had become the second largest refinery in the world. In 1905, the City of Richmond was incorporated with a total of 2,218 inhabitants; from that time until the 1920s the city experienced rapid growth. Despite this growth, Richmond maintained a small-town, semi-rural atmosphere until the advent of World War II. A massive shipyard boom during the war years led to an influx that increased the population from 23,642 in 1940 to 93,738 in 1943. Most of the population influx remained in the area after the war, presenting the city with a host of social problems, including overcrowded and inadequate school facilities.

To combat this inadequacy, in 1945 a large building and remodeling program was begun in the Richmond school system, continuing until the present time. Throughout this 20-year period of school construction, there have been numerous controversies over the school attendance boundaries, since it was feared by some that these arbitrary lines would create problems of segregation by socioeconomic grouping. The City of Richmond, like most urban areas, is divided into fairly well-defined social areas; the well-to-do live in the wooded hillsides overlooking San Francisco Bay and the poor live in tracts or older dwellings on the flatlands near railroad tracks and industrial plants.

Overall, the Richmond area is classified as light industrial; some 190 manufacturing plants are located here. About three-fourths of the employed males are manual workers and two-fifths are "white-collar" workers. There is wide variation between the attendance area of its high schools, however.

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[*] Much of this material was drawn from various publications of Dr. Alan Wilson of the University of California at Berkeley. He has studied the Richmond District extensively.

The period of this study--1966-68--found the RUSD, with a student population of over 43,000, the eighth largest district in California. It covered 110 square miles and encompassed five cities. At that time, there were 45 elementary schools, eight junior high schools, four comprehensive high schools, and one continuation high school. Almost half of the secondary school students in the unified district were in a college preparatory track; entry was closely associated with lines of social stratification: three-fourths of the children of professionals and managers were enrolled in such a program, compared with only one-fourth of lower-class children.

It was in this setting that the interdisciplinary concept of teaching had its origin.

Harry Ells High School

Origin of the Program

Pre-existing Conditions. At the time of this study, the 1966-67 school year, Harry Ells High School, with an enrollment of about 1,812 students, was the third largest high school in the RUSD. Situated on the flatlands a short distance from San Francisco Bay, it served a predominately blue-collar neighborhood.

Harry Ells had its origin in 1945 as a junior high school constructed to help meet the demands of the great influx of wartime population to the Richmond area. It continued to operate as a junior high from 1945 to 1955, at which time it was converted to a three-year high school by decision of the school board. Some controversy surrounded this decision; certain segments of the community believed that the boundaries created by the new Ells High School tended to concentrate higher socioeconomic groups at Ells and lower socioeconomic groups at nearby Richmond High School. It was feared that this concentration would have an effect on curriculum offerings at the two schools, perhaps making Ells a college preparatory school and Richmond a vocational trade school. Because of this dispute, boundaries were redrawn early in 1959, and it was felt that the issue had been satisfactorily resolved at that time.

Evolution of the Program. As noted earlier, out of a deep concern for student welfare on the part of the counselor and his colleagues emerged the beginnings of a program that would, in time, offer alternatives to the average Ells'underachievers. Interaction with equally concerned staff members from De Anza High School and with the technical institute educator led to the final design of the innovation at the summer curriculum workshops held in 1961 and 1962. The Ells counselor and teachers attended the workshops; each represented their respective disciplines of English, Science, Math, and Industrial Arts.

In the spring of 1962, selection of students for the first experimental class at Ells began--a joint effort of the counselor and the teaching team. The general faculty was also involved in this process; the teaching team asked them for suggestions on likely candidates for the new program. At all times, the voluntary nature of the selection process was stressed; no student was to be admitted without full knowledge and permission of his parents. Parents were informed initially by mail of the new program, with an invitation to attend an evening meeting at which the program's goals and philosophies were explained. This first class also included a few test cases of serious behavior problem students; it was hoped the program might provide a solution to their emotional problems.

Status did not appear to have been a large problem in the introduction of the Ells program. A few students turned the program down, preferring to stay with College Prep. A few parents also rejected the idea, but it was reported that most were enthusiastic about the new program, many viewing it as the first real alternative they had seen to failure in College Prep.

There was little resistance from the Ells faculty. Some of the teachers may not have understood the total philosophy of the program, but most had become aware of its development through the many planning discussions held in the Ells faculty room. As one of the innovating teachers said:

> We had good support from the rest of the faculty--they never felt that we were a favored department.

There appeared to have been a deliberate strategy to initiate the Ells program on a low key as just another part of the school's total offerings. One team member said:

> Once it was accepted, we didn't ask for much. In fact, we made it a policy at Ells not to ask for very many concessions...We wanted it run as an independent part of the school program, rather than having special monies and special privileges and special this and that.

From the start, the Ells principal had taken little part in the planning. As he expressed it, his attitude was:

> I let the teachers bat the thing around and build it up...I feel this is better than having an administrator dominate a program. Let the teachers feel that it's their baby and that they are the ones who are giving it the drive.

In September 1962, the Pretechnical (PreTech) program concept became an experimental reality at Ells as the first group of students entered the classrooms. The innovators had not anticipated the consequences that would result when 29 average boys were put together for four periods a day. Once the boys became acquainted, the PreTech classrooms became lively. Some personality conflicts developed between the students, but overall group behavior was not reported as a major problem in that experimental year. One teacher, describing that first class, said:

> We had a lot of young men who had potential, but an awful lot of them had personality problems because they were frustrated and realized they should do better. That first bunch was kind of interesting. We had a lot of fun with them. They knew it was an experimental class and we were quite open in telling that we would make mistakes along the way.

Quite naturally, there were mistakes and changes in approach that had not been anticipated in the planning sessions. The team members felt that the most difficult part of that first year was their inexperience in interrelating subject matter. As one teacher recalled:

> In the second workshop, we had written out a voluminous curriculum guide of 256 pages which was intended to tell us more or less what we were going to do day by day and it was helpful. But then we didn't use a lot of it because it was unusable. What we found out in that first year--and have recognized every year since--is that writing curriculum is something you have to do every day, every week. And we found that it worked best when we did it together.

The team met during school hours on a weekly basis; no released time was provided. In addition, they held Saturday meetings once a month with the De Anza group; funding for this time was provided by the Rosenberg grant.

From a teacher perspective, the approach taken to the program in its first year was described by one participant as follows:

> We deliberately didn't want to have a program that was going to be a teacher back-breaker. We knew that if it demanded too much of teachers it would have a poor chance of survival. We worked hard, but we took it easier than others might have.

Although the program was being played in this low key at Ells, publicity burgeoned. Visitors clamored to get into the school to talk to the teachers and students about the program. It was a busy and exciting first year for the innovators; when it was over the teaching team felt it had also been a successful one. They were convinced, by their growing understanding of their students, that great gains had been made.

Operation of the Program

Objectives. The SRI research team began its study at Ells in the fall of 1966--four years after the program's introduction. During that period of time, there had been no major changes in the program's basic design; it continued to be a multisubject program taught by a team of teachers who cooperated in relating their specialized subject matter. There had been a significant shift, however, from the occupational orientation with emphasis on pre-engineering technology. All teachers at the time of this evaluation agreed that the program was providing (1) a good basic education with primary emphasis on communication, and (2) broad skill training with sufficient flexibility to permit the student to go in a large number of occupational directions. As described by one teacher:

> Well, it's a general education program, despite the name, probably more traditional than most programs

> today, consisting of a cooperative teaching effort by teachers in the fields of English, Science, Math, Shop, Drafting. It doesn't differ in terms of basic curriculum--an English teacher is an English teacher; he's nothing else. He teaches solid English. He orients it to the masculinity of the kids that are there and our reading lists reflect this, although it's a solid reading list. They do write tech reports that are related to other materials, however...The vocabulary in English is a finer reflection of a more highly technical nature than you would see in a standard English vocabulary list...I think you might call this education for a technological society, really...

The PreTech Students. At the time of this study, three classes of 83 students had been graduated from the Ells PreTech program. Students were still being selected by teachers and counselors, with teachers having the final say on who entered the program. The original selection criteria were still being used; the only departure had been in elimination of serious emotional problems. Experience with the first year test cases had demonstrated the program could not provide therapy for these students. Although withdrawn and even somewhat hostile students were reported to have become verbose and expansive, those with severe problems had tended to have a negative influence on the total group.

The SRI project staff found that the 1966 PreTech classes consisted of 24 junior and 25 senior boys; most of them had been in tenth grade College Prep programs. At Ells, there was much stress being placed, by both teachers and students, on the importance of group identity; there appeared to be a strong feeling of camaraderie, especially among the seniors. As one senior said:

> Well, I didn't really know until this year how everything was going to turn out. Last year I wasn't sure whether the program was going to work or not. It was rough at the first half of the junior year. Like when you go from a mixed class into a class that's got all boys together at the same time there are problems. There was a fair amount of goofing off and things didn't get quite clear...But now everything's working; we're in there and we know what to expect from each other. We've gone through about two years together and so the good thing about it is that being together for such a long time we find out about everybody and then we know how we'll be able to work together... The group as a whole is pretty well together and we all mess around together.

The same student, when asked who his favorite classmate was, said, "It's a 24-way tie."

At the time of this study, the junior class had not yet developed a similar camaraderie; in fact, teachers reported that for the first time since the program's initial year there were a few students who perhaps should not have entered the program. As yet, only one student had transferred from the Ells program, feeling it was not in his field of interest. Teachers had taken care, through the years, to spend much time in counseling students who appeared discontented.

Teachers spoke of the adjustment period of the junior year as being one in which "liberation" from the rigidity of traditional classrooms tended to result in overexuberance, which in turn can pose problems of classroom discipline. This did not appear to be a large concern for the Ells team, however. As one teacher said:

> You have to allow a little more horseplay than you would accept in a normal class; if you harness them in too tight, you lose esprit. It takes a special kind of discipline--you give them a little more freedom, yet maintain control.

The Teaching Team. The Ells teaching team, at the time of this study, was composed of eight experienced male teachers; all but one member of this group had six or more years of experience. Only one of the original teaching team remained in the program; he had played an important role in its innovation and continued to function as the team chairman. Three other members of the teaching team, although not actively participating in the program's formal design, had watched its early development with interest and had subsequently requested PreTech teaching assignments. Two of them had joined the program in its second year of operation. One said:

> I requested the program. I suppose it was a little on both sides. I think that some of the guys in the program were taking a look at me and I was taking a look at them...And the main reason I wanted to get into it was that I felt this would be a chance to do a little bit of experimentation with my subject matter. I didn't have any particular misgivings at the time because I figured that the very least I could give the kids would be what they would be getting in their regular English class and it seemed a chance to give them considerably more.
>
> My reasons for staying with the program now are very different; it has changed me considerably. I guess I had a pretty stereotyped notion of what English was and it didn't involve any of these other things. At that time, I really don't think I understood what our technology as such is all about, involving business and industry and education and everything else...

Five of the six teachers who had left the program had gone on to better positions; only one had left, disenchanted with the program, unable to cope with the vibrant hyperactivity of a junior PreTech class. Teacher replacement had not been a problem; most had been volunteers. One teacher expressed the thought that an interdisciplinary team could survive the problem of teacher turnover if it had a strong team chairman to stimulate enthusiasm, and if the team, as at Ells, was given freedom by the administration in selecting replacements.

Six of the eight teachers in the Ells program at the time of this study had received formal training in summer workshops sponsored by the CTE. All agreed that training of this nature was essential for effective PreTech teaching, but that it could have been improved by less emphasis on integration of subject matter and more stress on working out common problems. One teacher thought it would be profitable at such sessions to have teachers from their respective disciplines spend a week in exchanging ideas and problems common to their subject areas. Others thought teachers entering interdisciplinary programs should have the opportunity to spend time observing classes, followed by at least one week of training under the supervision of a teacher with experience in the program.

Two of the Ells teachers taught both junior and senior classes; one of these, in his second year in the program, thought this was desirable:

> Last year, I was kind of hesitant about the program... juniors seemed to be backing away from everything that I tried to tell them to do. The senior year has made a complete difference in it...I don't have to push them. They want to learn...That is why I think the instructor should follow right along to their senior year; he can see the change...Otherwise, he will become discouraged and leave.

The other teacher, however, thought it disadvantageous in terms of (1) potential loss of authority with the increased familiarity that results from being with the same students for two years, and (2) the doubled class preparation time. All of the Ells teachers agreed that it takes more time to prepare for the PreTech program than for their other classes, with a rough average estimate indicating about four hours more per week.

Team meetings at Ells had proved to be an essential part of the program. During the period of the study, the team continued to meet on a weekly basis, as it had been doing since the program's first year. These meetings were held every Thursday during fourth period in the tech lab. All teachers but one had a common conference period scheduled for this purpose, but no released time was provided.

At team meetings, discussions generally centered around organizational planning and student progress; a significant feature was the open invitation to PreTech students to meet with the team. On one occasion observed by the SRI staff, two PreTech seniors registered a complaint for their entire class: the seniors felt they needed more drafting time than provided by the scheduled two periods per week. The principal and vice principal, also sitting in on the meeting, discussed the problem with the students and their teachers. They suggested various alternatives and promised to remedy the situation.

Among the PreTech teachers there appeared to be mutual respect for each other's interests, capabilities, and viewpoints concerning the program.

> We all get along with one another and some of the best friends I have in this racket have been connected with the program...I think this strengthens friendships for one thing...And also I think it's strengthened me as a teacher professionally... So I very much like the work in the team.

Most of the students viewed their teachers as a cohesive group doing things differently than teachers in regular high school classes:

> They act more like themselves...They can talk more freely than any other teachers and I think they enjoy it...They are more like friends than teachers... We can discuss almost anything with them...They tell jokes and stories, but in doing this they teach us more...Individual help is their motto, I think...If one guy doesn't do so good due to laziness in one class, all the rest of the teachers bug him until he does better...They ask our opinion and respect it.

The Curriculum. The PreTech students followed the class schedule outlined below (Shaded areas indicate PreTech classes):

Period	Monday-Friday	
	Junior	Senior
1	Technical Laboratory	English
2	United States History or Physical Education	Technical Laboratory
3	United States History or Physical Education	American Government or Physical Education
4	Lunch	Lunch
5	Physics or Mechanical Drawing	Chemistry or Mechanical Drawing
6	Mathematics	Mathematics
7	English	American Government or Physical Education

In the time since the program's initiation, English had become the focal point of the Ells curriculum. Emphasis was being placed on giving the student effective communication skills. Difficulties in relating the content of Science and Tech Lab had focused the effort on English as the unifying discipline that served to tie the others together. One teacher noted:

> The original attempt in the first two years in the program was to correlate the Tech Lab with the Science class and this turned out really to be quite a futile thing because you can't do too much with science and shop. You can do some things of a rudimentary engineering nature in the shop but you can't really do science. You can do science in the Science Lab, particularly if you are working out of a text book... traditional experiments and so on. So it gradually came to us that the area which was a real pivotal thing was English because English can embrace all subjects.
>
> Actually, what we have now is Science, English, Shop, and to a certain extent Drafting--making some attempts at correlating. We haven't really gotten to the point of correlating Math and English, although I would like to do something with that. I have a unit in the back of my mind that I would like to write up that would correlate the language of Mathematics with the language of English and use this as sort of a concept of languages as a springboard to analyze sentences.

As previously noted, the first teaching team had found it impossible to thoroughly interrelate all courses. The current team agreed that 100 percent interrelation of subject matter was an impossibility. As one teacher put it,

> We relate when the opportunity presents itself; it's not forced. I'm not sure that I'd want any more than we are operating with right now. It's a very difficult thing to do; you can break your back trying to get too much integration. Each year we teach, we learn more. If we had twice as much integration, I don't think the course would be twice as good.

Although students worked around structured curriculum units, the teaching team was now prepared to make rapid adjustments, to cut short a unit that wasn't achieving results with students, or to expand one that was catching on. As one teacher said:

> We found that something that works very well with one group of boys didn't work with another group of boys another year.

During the year of this study, the team followed four basic units for each of the junior and senior classes, e.g., Simple Machines, Measurement, Electricity, Heat Radiation, and the Transit. These were units that had been developed by the Ells teachers during previous summer workshops. A unique development in the 1967 summer workshop found four of the Ells PreTech students employed to critique the program and to write curriculum units. Many of their suggestions were incorporated into the Ells program; a sample of the student-developed unit "The Internal Combustion Engine" is shown in Table 2.

Interrelationship appeared to be viewed, for the most part, not so much as a subject matter vehicle, but as a framework in which teachers gained insight into student problems. One teacher summed up his feelings in a way that was typical of his colleagues:

> It is extremely important because you must get together, you must be able to talk to each other, and I mentioned the most important thing a teacher could have was the adaptability within the subject matter to what others are doing...But I think it's the interrelation of the teachers and the interaction of the youngsters that operates for us more than any design program. The fact that you do cooperate in relating subject matter gives you the opportunity to know more about every youngster...
>
> Students are able to perceive that teachers do care about them, which is often difficult to get across to them in the framework of our modern educational system...Through PreTech we have become more cognizant of the really enormous task it is to educate children; it's easy to lose sight of this in the isolation of the traditional classroom.

Classroom time not spent in working on interrelated units was spent learning basic subject matter in the respective disciplines. Physics was a favored course; emphasis was placed on laboratory experiments. English was another favored subject. Here, in addition to writing technical reports on their projects and learning basic principles of grammar, students engaged in a large amount of free discussion.

The chief occupational focus of the program was centered on its field trip activities; five or six trips were taken by each PreTech class to nearby industrial firms where technicians were observed working on the job. These firms also provided classroom speakers who discussed with the students significant aspects of various types of technical occupations. Alumni often returned to Ells to describe their employment experiences to the current classes; on occasion, curriculum was revised on the basis of their suggestions.

Table 2

SAMPLE ELLS HIGH SCHOOL PRETECH PROGRAM (Grade 11)*

Interrelated Subject Unit: The Internal Combustion Engine

English	Physics	Drafting	Algebra	Tech Laboratory
Mechanical vocabulary and terms Technical oral and written reports • Research and reading preparation Outside reading Discuss engine mockup, math and physics theories, principles of the engines Supplement • Field trips, films, guest speakers	Fly-wheel-inertia, centripetal and centrifugal force Physics of the cooling system, including radiation of heat Simple machines • Connecting rods and crankshaft • Other simple machines Compound machines Hydraulics Expanding gases Transfer of energy Velocity and acceleration Force and acceleration Energy and momentum Horsepower Torque Compression ratio Displacement Timing	Draw a part of the engine assembly • Draft parts to scale; use exact measurements of the parts • (Suggest student choose a part that will coincide with written technical report) Note: Before drafting class can be used in this unit, instructor must feel certain that students have a fairly adequate knowledge of drafting skills and instruments	Ratios • Gear and compression Volume of cylinder • Piston depressed, piston at top Displacement formula Discuss • Efficiency, torque and coefficient of friction	Introduction to engine • Background to internal combustion engines • History and purposes of different engines • Instruction in use of tools used by auto mechanics • Discussion periods Tearing down the engine • Dismantle; identify major components • Examine parts; observe how they work • Discussion periods Measuring and checking • Measure parts • Check against factory specifications • Discussion periods Reassembly • Finish measuring and checking • Start and complete reassembling • Test out engine

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Objective: To introduce the student, through practical application, to the opportunities in the automotive field beyond maintenance and general repair.

* This unit was developed by four PreTech students at a summer workshop.

Additional occupational information was provided through routine classroom discussion. In the Tech Lab, industrial teams were simulated; the class was often divided into project teams, which then elected student foremen, who subsequently evaluated performance. Inventiveness was also stressed; on completion of formal units students were encouraged to work on projects of their own interest and design. The Tech Lab instructor said:

> We give them a little more latitude, more responsibility, encourage them to think a little more, come up with their own projects when they have a little free time to do this...You know, this is the type of person that industry could use more; they have a little broader background in Math...they go heavy on the English, the communication is there..And I think the major benefit is they're learning to work as a team...They have to cooperate with each other, stop and listen to their partners, respect other people's thoughts and wishes...Same way if they go to work for someone; they are not going to be able to choose someone they are going to want to work with side by side...they are going to have to get along...

Junior college articulation, a problem in the program's early years, had still not been resolved to the team's satisfaction, although communication had been improved and some attempts were being made to provide tie-ins with the Ells curriculum. At the time of this study, in fact, a proposal was being written that was designed to subsidize Ells teacher and community college staff time in writing curricula.

The Counseling Function. Teachers stressed that the contribution made by the counselors was an important one, but they also emphasized that they had made no special demands on the counseling function. One teacher suggested the program might profit from the assignment of a counselor as a permanent working member of the team, thus adding counselor continuity.

The Administration. Two changes in the Ells administration since the program's initiation apparently had little effect on the efficiency of the teaching team. The team had continued to follow its original policy of making few demands on the administration. As one said:

> We don't want special privileges. It is our program. We do our own planning and we get everything we deserve in terms of what we represent in the total curriculum.

All teachers stated that the degree of administrative support extended to their program was close to ideal, i.e., active background support when needed but without interference. Most teachers believed that operation of the program would be difficult without this kind of support. One teacher thought it might be possible to manage without it, but to do so would take a remarkable degree of enthusiasm and dedication on the part of the team.

Outlook for the Future. New school construction in the Richmond district resulted in a breakup of the Ells team at the end of the 1967 school year. The team chairman and five of the other members of the teaching team went with the rest of the Ells staff to the newly constructed Kennedy High School, located a short distance from Ells. However, two of its most experienced and able teachers transferred. Their replacement, although a problem initially, was accomplished with relative ease.

Such a radical shift, both in terms of setting and personnel, will doubtless influence the program in significant ways. At the time of this report, however, the former Ells team, with its typical degree of stability, appeared to be operating the PreTech program as "just another part" of the Kennedy curricula.

De Anza High School

Origin of the Program

Pre-existing Conditions. De Anza High School is located in the suburban foothill area a few miles from downtown Richmond. It opened in 1955 and was built as part of Richmond's school construction program to alleviate the overcrowded classroom conditions caused by the wartime influx of population and postwar "baby boom." As the residential areas surrounding the downtown area became increasingly crowded, some of the populace tended to move to small, outlying areas such as El Sobrante, the community that De Anza serves.

At the time of this study, De Anza was a four-year comprehensive high school with a student body population of 2,120. Its attendance area served a predominately white-collar neighborhood.

The PreTech program here had its roots in the dissatisfaction of the Industrial Arts (IA) staff with its existing curriculum. As early as 1957, the chairman of the De Anza IA Department had written papers stressing the need to upgrade curricula in order to keep pace with the changing demands of a technological society. One staff member recalled:

> ...We wanted to upgrade the content of an IA course. We felt that students in Industrial Arts were, more or less, just being kept happy and occupied. We are talking about such things as Mathematics, and...Actually, we felt Science played a very important part in this, because as far as we were concerned, Industrial Arts is an extension of Science. It is applied Science.
>
> We were trying to integrate some project in our own IA Department...in drawing, wood, and metal...conceiving and studying designs in the drafting area...making patterns in the wood area...casting and fabricating the prototypes in the metals area, so that we should have some integration going on within our own discipline. But at that time, we saw the necessity, for example, when we introduced surveying activities in the drafting program, for teaching an extension of math. And we found that Shop Trig, for example, applied trig operations, could be taught to boys of less than university preparatory caliber. We thought that this...these kids should be more challenged.

Evolution of the Program. In 1960 the De Anza administrator, attending a meeting of the district's secondary curriculum committee, heard a report on an Ells High School proposal for an interdisciplinary course of instruction. Recognizing the similarities to his own IA staff's experiments, the De Anza principal proceeded to bring the two groups together. From that time on, De Anza and Ells staff members worked together in further development of their concepts.

The interaction of these two groups plus the technical institute educator resulted in the formal design of the PreTech program at summer curriculum workshops in 1961 and 1962. The De Anza principal attended these workshops along with five members of his staff. In contrast to Ells, where the innovating team was drawn from IA and relevant academic departments (Math, Science, English), the De Anza team was composed exclusively of IA teachers. Each team member, of course, was qualified to teach the required academic subjects, as well as IA. As one teacher said:

> ...We happened to be very fortunate in having a group of teachers here who had backgrounds that contained, in addition to a lot of very practical and valuable experience, technician type work prior to entry into teaching. They also had minors in fields that covered all the ranges that we needed. So we were able to build a self contained instructional staff.

In contrast to the introduction of the program at Ells, the PreTech program at De Anza was marked by a certain amount of resentment from both the general faculty and the counseling staff. Counselors, in particular, resented their exclusion from the program. The general faculty--especially English and Math Department staff members--resented the intrusion of a program that was such a radical departure from traditional curricula. One administrator recalled,

> I think there was one principal difficulty and that was the communication with other departments. The teachers involved in the new programs were working so hard trying to solve their problems that often their thinking wasn't communicated to other teachers; it had to be indirectly done through conversations in the coffee room. As a result, other departments began to worry as to whether those people were going to encourage their better students to go into a technical program, as opposed to going ahead and working directly for a university program.

In the same vein, one of the current teachers in the program remarked:

> Not too much information was disseminated to the faculty, and as a result it may have created an aura of suspicion on the part of the rest of the faculty. They thought, well now, this is a separate group, they are going to set up a separate school within the school...Too, some of the suspicions may have resulted from professional jealousies...Everybody has their own little domain that they are attempting to shield and protect--they are afraid that someone is going to detract from their importance.

However much resistance there might have been during this early period, the complete support of the De Anza principal for the Richmond Plan as a cause was never in doubt. One of the more energetic proponents of the experiment, he was completely dedicated to the Richmond Plan and single-minded in his determination to have it installed in the RUSD, particularly at De Anza High School. Many of his colleagues said that without him the Richmond Plan might not have been accepted. It is also possible, however, that this very firm administrative support may have added fuel to the fire of faculty and counselor suspicion of the RP program.

At De Anza, the regular counseling staff was not directly involved in selection of the students as it was at Ells; this undoubtedly contributed to the resentment of the program. The teaching team, convinced that the selection process was crucial to the program's success, felt that persons not intimately involved with the totality of the program were not qualified to select its students. The selection criteria that were employed remained parallel to that of Ells.

As at Ells, the teaching team asked for suggestions for candidates from the general faculty and also stressed the voluntary nature of the selection process. Parents were notified of the program and asked to attend a meeting at which the program was explained; no student was admitted to the program without his parents' permission.

Perhaps because of the differing socioeconomic composition of the two communities, status of the De Anza program was a somewhat larger problem that it had been at Ells. More parents seemed concerned about the possible effect of program enrollment on their sons' future education. The new teaching team tried to assure them the program would meet most college entrance requirements. As one academic instructor said:

> ...We did not want to close any doors for any students...This was part of the contract we made with our students...that they were going to get a sound, basic education that would prepare them

> to the extent they were willing to participate... that all doors would still be open to them... except the University of California. And that would be eliminated due to the language requirement.

A class of 30 students made up De Anza's first PreTech program, starting, as at Ells, in September 1962. Little mention was made of group behavior problems in that first year. Rather, there were glowing reports of the success and changed behavior of the new PreTech class. The De Anza principal played a prominent part during that first year; his door was "always open" to the PreTech students. When the team met on a weekly basis, he met with them; these meetings, in fact, were held in his office.

As publicity about the experimental program grew, there were increasing numbers of inquiries and visitors to the program at De Anza, more perhaps than at Ells. Some sentiment was uncovered in the course of the interviews that the De Anza Richmond Plan had more glamour than the Ells program. Perhaps for this reason, the first major television documentary of the PreTech program was filmed at De Anza High School.*

Operation of the Program

Objectives. The SRI research study at De Anza ran concurrently with that at Ells--both in the 1966-67 school year. The years between the initiation of the program and the time of the SRI study had seen few major changes. Basic RP objectives were still being followed; however, as at Ells, there was less emphasis on the occupational orientation in the current program than in the first years of the program. Much more attention was now given to providing a good sound basic education applicable to many occupational fields than to just the technical field in particular.

One of the senior teachers summarized the objectives as:

> Trying to identify a capable kid who isn't achieving in a University Prep crowd. Identify him. Get him, and use every cotton-pickin' device you can think of to motivate the boy to do better and prepare him for additional training.

Another said:

> ...Originally we were preparing students for two-year technical institutes...even more to the institute than to junior college--although we were aware of this possibility...As time went on, we found out

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* This film was produced by KRON-TV, San Francisco, in 1963. It is entitled, "The Techs."

> that the Junior College was much more available to the students and that this was to be our main avenue for training technicians...At first, frankly, we were concerned about the junior colleges and their apathy to our program. And consequently, we were geared more to the technical institute. But as time evolved, we have established a much better relationship with the junior college. And we find that it is much more accessible and available to the students. And that this should be the direction that the program should take.

The PreTech Students. The selection process at De Anza was still carried out primarily by the teachers, with the counselors taking part in a process of screening for candidates. Screening procedures remained similar to those used at Ells. Students with behavorial problems were avoided, since De Anza also soon learned that the Richmond Plan is no cure for such difficulties.

The team still believed that teachers should have the final say on candidates for the program. As one teacher told us,

> ...The reason I think this is desirable is that once the teachers have agreed to take those kids on, then we have a moral commitment with them; they've met our criteria--they've met our standards. And we don't feel like we've been "plunked" with a list of bodies...And this is an equal kind of thing, they have to be good for the program. If he's too slow, he can't catch up quite fast enough. If he's too fast, he learns too quickly and then he plays.

The PreTech classes at De Anza were composed of 25 juniors and 25 seniors who were selected for the program in the second semester of the tenth grade, where the majority had been in the College Prep track.

The attention and support given the program in its first year, and the effort and commitment of the teaching team through the succeeding years had made the program an appealing one, both to student and parents. Generally, the team had a fairly large list of eligible candidates from which to choose.

A high degree of parental pride in the program was reported. Teachers and counselors both said parents generally viewed it as a desirable opportunity for their sons; some had even put pressure on their sons to enroll. A few parents raised the usual questions about college entrance, but the team usually satisfied their questions by emphasizing that a PreTech student would be eligible for any college program except the University of California; if he desired to make up his language requirements, he could eventually perhaps transfer there.

At the time of this study, status was not a major problem. The program and its students appeared to be respected by the student body. A newspaper published regularly by the PreTech students reported their activities. Some of the other students made occasional derogatory remarks such as "College Prep flunkies," but these did not appear to have a negative influence on the PreTech students.

At one student selection meeting, observed by the SRI staff, a potential PreTech candidate posed the question: "What is there about this program that makes other kids make fun of it?" A PreTech student answered:

> Most of the time it's just ribbing...if you're in a small group, like [this PreTech student], he's in a real good band, you guys get ribbed all the time... They say "Oh, you screwy musicians," and the same with [another PreTech student]...We're bound to get ribbed but...you're not "declassed" socially or academically. You don't move down in any class, you just kinda get kidded and elbowed and stuff. But thats all, it's not serious...You just grin and say "they don't mean it."

Group behavior was not a significant problem. As at Ells, experience had taught the teachers to cope with the hyperactivity of the junior year through understanding of the natural adjustment period that inevitably occurred in the all-boy class. In contrast to Ells, however, unexpectedly the junior class in the year of this study had developed an early esprit surpassing that found in the seniors.

The Teaching Team. The PreTech program at De Anza was planned and taught by five male teachers. Two had been on the first-year team; two of the others had been with the program since its second year of operation. Two of the teachers who had left the program went to advanced positions elsewhere. One had left the program in its first year, transferring to another school.

All had attended summer curriculum workshops and thought such training was essential for teaching in the program. Some had participated in getting interdisciplinary programs started elsewhere:

> A group of us went back to central Michigan year before last to put on a workshop to help them prepare for a similar type of program.

The De Anza team was marked by a degree of compatibility and commitment similar to that found at Ells. One teacher portrayed the sentiments of his colleagues when he said:

> If the program were to "die," I think my life as a teacher would have to readjust enormously because I don't think I would feel the challenge...I look back to before the PreTech thing and I think teaching was dull...And it is only challenging if you work it right. If you don't work it right, say operating a program in name only, or not trying to operate the optimum program--then it would be frustrating and an enormous disadvantage...If you don't have an on-going, viable kind of thing, I don't think that the teacher's interest would be there.

Their rapport and enthusiasm remained undiminished from the early years of the program. One of their students put it this way:

> The teachers care about us; the teachers seem to care more about the Tech program than they would about just any old class, they seem to have a feeling for the program--pride. Teachers have a pride in their program and it gives them more of a goal to make the whole thing go good.

The Curriculum. Since the PreTech program at De Anza was started by teachers from the IA Department, it is no accident that emphasis of the program has been in the Tech Lab. Although the current program was not staffed exclusively with all IA teachers, the focus on the Tech Lab remained. The importance of this to the De Anza program was emphasized by the fact that the teaching team insisted that two teachers be involved in each Tech Lab for the junior and senior classes, although this was not possible during the year of this study.

Beyond this, the program at De Anza conformed closely to the traditional Richmond doctrine of integration of subject matter for a block programmed set of courses. The class schedule followed was (shaded areas indicate PreTech classes):

Period	Monday-Friday	
	Junior	Senior
1	Algebra	American Government
2	United States History	English
3	English	Physical Education
4	Lunch	Technical Laboratory
5	Physics	Lunch
6	Technical Laboratory	Trigonometry
7	Physical Education	Chemistry

The curriculum differed from Ells in that (1) drafting was not a formal part of the curriculum, and (2) students were together as a group for social studies, although the content of these classes was not related to the PreTech subjects.

The interrelationship of subject matter loomed significantly at De Anza. In the early days of the development of the Richmond Plan it was the staff at De Anza who stressed most strongly the need for integration of subject matter. They still believe that without this integration there actually is no program.

The teachers did not have a common conference period nor did they have released time for meeting together. This made for obvious difficulty in planning for the interrelationship of subject matter, particularly in a program that requires flexibility in planning and curriculum development almost on a day-to-day basis. Nevertheless, they tried to meet on their own time whenever necessary and feasible to do so; this averaged every ten days.

The lack of the common period for meeting had been a source of concern for all teachers involved. However, the team had such a long history of effective working relationships that it was managing, at the time of this study at least, to operate the program in what seemed to be an effective way. This should not mask the fact, however, that there was a considerable amount of resentment felt by the teaching team about the question of a common meeting time. They believed that this is a prerequisite to any continued and effective functioning of the Richmond Plan at De Anza High School.

During the 1966-67 school year, both juniors and seniors worked on at least six interrelated units such as weights, gussets, pinhole cameras, and electroplating. A model of a popular unit, "The Speech Synthesizer," is shown in Table 3.

At De Anza, creativity and inventiveness were stressed. Students were encouraged to use their own materials and designs in constructing projects. As one teacher said:

> We may not cover as much material, but we do go into greater depth in areas that we want to explore. And we find that these students, some of them, get into things that are at a pretty sophisticated level for a high school. But the thing we try to encourage is the creative approach to problem solving... The interdisciplinary approach involves more student participation, student thinking, and a discovery method as opposed to what is often carried on in other classes.

Table 3

SAMPLE DE ANZA HIGH SCHOOL PRETECH PROGRAM (Grade 11)
Interrelated Subject Unit: Speech

Tech Laboratory	Physics	Algebra	English
Diagnosing machinery mal-function by sound	The nature of vibrations	Cartesian vectors	The importance of speech
How sound is produced mechanically	The periodic function and the sine curve	Sine-cosine-tangent laws	Types of speeches, speech preparation, speech delivery
Isolating engine noises and vibrations	Simple harmonic sound and its mathematical description	Angles by degrees and radians	Pronunciation
	Damped vibrations and noise control	Trig tables	Parliamentary procedure
		Right triangle computations with tables	Social graces
		Right triangle computations with the slide rule	
		Right angle vector computation	

Industry involvement was limited, for the most part, to sending speakers to the classroom and arranging field trips. Four field trips were taken to area industries by both juniors and seniors. Teachers regretted that the Industrial Advisory Committee set up in the early planning days of the innovation had not been duplicated at their school. In that first summer, teachers had worked in industry for a short time to gain knowledge of technical job requirements. A local service club had given $100 scholarships; one nationally known firm had provided slide rules.

Junior college articulation, a problem from the early days, was improving, although the team felt there was still much to be desired in this regard.

The Counseling Function. Over the years the resentment of the teachers and the counselors had diminished remarkedly. At the time of the study there was generally a good understanding of and sympathy with the program on the part of most teachers and counselors, and only vestiges of resentment remained. Although the team continued to handle most of the program details, one counselor was beginning to take a more active part.

The Administration. It is significant that the principal in the first year of the program was replaced in the second year by another who did not view the program with the same enthusiasm. Although the new principal did not resist the PreTech program, he tended to view it as another program among many at his high school that did not deserve any special or unique attention. The teaching team was still adjusting to this change in administrative philosophy when this study was made. One teacher summed up the situation as follows:

> Oh, I think there has been a steady improvement. At one time, the team, I think, was somewhat depressed about the whole thing. But I think the situation has improved, and at the present time I feel that there is a genuine interest...in this. I think that we have to be realistic about these things. Perhaps, where we were highly favored in one environment, I think the current principal feels that--and justly so--that he has a total program that he has to administer and that he doesn't feel, in clear conscience, perhaps, he can give as much time as the former principal gave for it.
>
> But this is what makes the program come into being, the special interest shown. And if you don't have that, you don't have a program. You will never get something like that off the ground unless you get strong support from the administration on it. And once the thing became self-sustaining to a degree, I think it has been able to carry on of its own momentum to a large degree.

Outlook for the Future. PreTech has a strong tradition at De Anza High. This tradition has been maintained by a dedicated group of teachers over a long period, during which some serious problems have been faced and solved. With the 1968-69 school year about to begin, the best available evidence suggests that PreTech will continue to be strong at De Anza.

Two of the veteran teachers at De Anza, along with the principal of the RUSD's Continuation High School (formerly the principal at De Anza when the PreTech program was originated), have been awarded a National Science Foundation grant to develop a program in health occupations using the RP approach (jointly with the University of California). It is possible that this may strengthen PreTech at De Anza.

Richmond High School

Origin of the Program

Pre-existing Conditions. The publicity surrounding the innovation at Ells and De Anza high schools undoubtedly was a significant factor in the installation of the program at Richmond High School. Visitors often asked: "Why, if the program is really accomplishing what is claimed, isn't it operating in all four Richmond high schools, instead of just two?" And a few Richmond parents, hearing good reports of the Ells and De Anza programs, were requesting for their offspring a similar opportunity at their own schools. Perhaps as a result of these pressures, and certainly because of a belief in the PreTech program's worth, the Richmond school district administration decided to install the program in its two other schools.

The same administrative committee that had earlier rejected the innovators' proposals, recommended that the program be included in all Richmond high schools (except the Continuation school). There was strong support for the idea because theoretically, at least, what is offered in one school must be available for students at another school.

This decision appears to have been made without the approval of the administrative staff of Richmond High School. Late in the spring of 1964--as Ells and De Anza were about to graduate their first PreTech classes--the decision was announced. The principal of Richmond High was asked by administrative headquarters to implement the program in his school.

Richmond High, located in the flatlands of the East Bay industrial complex, with a predominately working class clientele, appeared to be highly adaptable to the occupational orientation of the PreTech program. The school had large shops, well supplied with equipment. In the 1930s, a strong vocational program was introduced to meet the needs of the approximately 50 percent of its student population who were then classified as terminal. In this setting the Richmond administrator, who had been with the school since 1925, proceeded to carry out the district directive.

There is little or no evidence to suggest that a climate of receptivity awaited the program's inauguration; but neither was there strong resistance prevailing. Certainly, as a result of the publicity generated in the press and in interschool communications, the Richmond staff was at least aware of the Ells and De Anza programs. Some of the teachers had even attended early planning meetings of the innovating teams. Richmond High's counselors had previously been exposed to the general concern of the Ells counselor for the students whose needs were not being met in the traditional programs.

One counselor recalled:

> I think a lot of people here have thought along these lines...This is something we discussed in a body with [the Ells counselor] a lot of times...I mean we realize there's a need for this kind of thing. But here at Richmond High, there was a feeling that we had a program which maybe did some of this in our vocational shops... Of course, here it is pointed more toward the actual manual part, without the PreTech Science and Math tie-in.

Evolution of the Program. The first step taken by the principal in implementing the program was a general faculty meeting at which adoption of the new program was announced and teacher volunteers were solicited. When later asked by the principal to teach in the program, those so invited were willing to try. On the part of the teachers there appeared to be a feeling of belief in the program's need and worth. However, the problem of effective cooperation by the counselors was ever present. (See comments by counselors.)

The new teaching team and the counselors proceeded to plan for the program. Visits were made to neighboring Ells and De Anza to collect available information. The teaching team adopted the general format of the PreTech program, i.e., four teachers in the subject areas of Math, English, Science, and Tech Lab. Using the basic selection criteria of the Ells and De Anza programs, Richmond High's seven counselors assembled candidates.

There was sympathy with the objectives and philosophies of the new program but also some confusion concerning details. One counselor recalled his initial impression:

> I thought it was something that was long overdue in coming and I was enthused about it because it was in keeping with some of my basic attitudes about education...And I had the feeling that the people who started it were well-meaning people that wanted to serve up something basically that would do the kids some good. But their thinking really hadn't jelled in a lot of areas as far as where they were going...I thought the waters were really a little bit muddy regarding the sort of customer they were looking for...I had some misgivings about students that had done rather poorly in first year algebra jumping into second-year algebra...I wasn't really too clear as to the objectives of the program and the goals.

A group of students was selected and, in September 1964, entered a program in which an aura of uncertainty prevailed because the new PreTech teachers had received little, if any, formal training for the job that lay ahead. One recalled:

> We briefly visited the other schools, but it only scratched the surface and did not compare to sitting down and going into the problem areas specifically.

Besides this lack of advance training, no common period was allotted in which the team could meet to plan and interact. They tried, however, during that first year to get together as often as possible; generally once a week in lunch-room conversations.

Their administrator wanted his PreTech program introduced without any fanfare:

> We thought this program should stand on its own feet without all this publicity...Any program must earn its way. School people have a habit of putting in programs and then evaluating them to be good...There was free money at Ells and De Anza; it made it possible to get teachers to go into PreTech...There was no extra time or money here...our teachers looked upon the extras as a passing fancy...You can't do that sort of thing forever so you had better not start it.

One staff member, however, declared:

> We didn't have the impetus behind our beginning as they did at the schools that started because they were the people who thought up the idea. And in any area where a person thinks up an idea, they have an awful lot of enthusiasm for it...So they're going to put in a lot of extra time. When you start a program like this it's going to take more time. Any new program is going to take more time; you can't treat it as a program that's been here for years.

Operation of the Program

Objectives. In 1966-67, Richmond High, with a student population of about 2,488, was the district's largest high school. The PreTech program at Richmond High was still guided mostly by the original doctrine developed years earlier by the Ells and De Anza innovators. Program objectives were therefore concerned mainly with an alternative curriculum for the average underachiever. However, as at Ells and De Anza, the broad goal of technical preparation had shifted to a stress on a sound general education with particular attention, at Richmond High, on Mathematics, Science and English.

The PreTech Students. Twenty-six junior and 16 senior boys made up the PreTech program; most of them came from the tenth grade College Prep programs.

Selection of these students for the PreTech program was accomplished by the seven counselors to whom all students were assigned on an alphabetical basis. The selection process remained largely the same as the first year although it was reported that much less emphasis was placed on standardized tests and more placed on course grades and judgments of staff members. Some staff members recommended more use of tests reflecting interests in academic areas and in occupations.

One of the major problems connected with student selection seemed to be in determining what criteria should be employed. One counselor reflected on his own limitations in selecting PreTech students:

> We are so busy doing so many things that we haven't had the time really to know as much about it as we might know. I think that my own temperament kept me from getting as much as I might have out of all these attempts to acquaint us with it...I could have found out a lot more...I am so academically oriented because my feeling is, either you are College Prep or you are not and if you are not then it is too bad. This is not a good attitude because I think youngsters are salvagable and yet I feel that if you are going to college you must go to a university, don't fool around in JC or a state college. I have to do a lot of self educating along this line...

The Teaching Team. Six teachers (five male, one female) made up the teaching team. Two of them had started teaching in the program's first year (1964); two joined the program in 1965 to teach the second year seniors; two had been added to replace teachers who had dropped out of the program. Five had 10 to 20 years of teaching experience; one was in his first year.

The team had different reactions to the program. One veteran teacher of many years in the RUSD remarked:

> When I was asked to come into it last year, I had dubious thoughts about it because I was informed how difficult the boys were to handle--a bunch of 'wild indians' so to speak...But the more I thought about it, the more intrigued I became...Because I had heard all these fantastic tales...I'm a hard-line teacher, have been for years, and I thought, well, maybe my method will work...And it was a challenge to me, to see if I could handle them any better than the last person had.

One teacher of the junior class said:

> I liked the idea initially very much because I'd worked in industry and came across an awful lot of people who had high ability but no formal training; and they were just either frustrated or useless to themselves; and this sort of person would have benefited from a course like this at the right time in his life...And I figured, here is the chance. I was really looking forward to teaching PreTech.

As noted, there had been little formal teacher training for the program, although three had been in on early visits to the Ells and De Anza programs. All but one thought a period of observation in other schools would have been beneficial, prior to teaching in the program. One teacher said she had been frustrated in her early attempts to find curriculum materials:

> When I asked for material that had been done in previous years my answers were so nebulous that I was very frustrated in the beginning...But as I've been in the program I can readily see the reason; they could not give an outlined curriculum--it is not possible because each Tech class varies...It depends entirely upon the class, and upon the mood of the class in a given period.

The teacher who had had training found he could not apply the unconventional techniques he had been trained to use because

> The boys don't have enough background--that's where the biggest loophole is...There are a lot of things you can't do without the basic theory, so I had to revert back to that.

The administrator said that in selecting PT teachers he had looked primarily for those "who had outside interests and hobbies":

> A teacher with outside interests will attract kids... Then the teachers don't go crazy with the job, and have something to retreat into.

During the two years of the program's operation, no common conference period had been scheduled for the Richmond team. In the year of this study the common lunch hour that had been occasionally used for planning in the program's first two years was not available. Nevertheless, they tried to get together as often as possible. Two teachers using the same classroom had conversed about their mutual assignments during the between-period break.

The Curriculum. The PreTech students followed the class schedule outlined below (shaded areas indicate PreTech classes):

Period	Monday-Friday	
	Junior	Senior
1	Physics	Chemistry
2	United States History or Physical Education	English
3	Technical Laboratory	American Governm[illegible] or Physical Education
4	Lunch	Lunch
5	English	Trigonometry
6	Algebra	Technical Laboratory
7	United States History or Physical Education	American Government or Physical Education

The team tried to interrelate their subject matter whenever feasible, even though no structured projects were used. Most of the relationship that occurred had been in the senior curriculum between Electronics, Chemistry, English, and Math.

The most significant change in curriculum appeared to be in the pace of instruction rather than in content or method. Teachers, counselors, and administrators emphasized the fact that course content of both Science and Math was that prescribed for the College Prep curriculum, but that PreTech was slowed down to meet the needs of the students. As one teacher stated,

> We follow the College Prep textbook units but may skip some and usually by the end of the year will have completed approximately two thirds of the text book while the College Preps have completed the entire text.

Despite the fact there were no "model" integrated projects to work on, senior students tended to appreciate this slowed-down pace of instruction. One said:

> College Prep is a status course, they give you all this work, and keep going and going and going, but in PreTech they slow down to where you can hack it all at once, they

> aren't in a rush...You can take your time and pick it up and remember it, in College Prep you have to learn it tonight and forget it tomorrow...

The occupational orientation of the program was stressed. Time was spent in English discussing occupational possibilities, filling out employment applications, giving oral reports on employment fields, and developing proper attitudes toward job situations. Two field trips were taken to industries in the area; outside speakers had appeared in the classroom. One teacher regretted that industry had not been involved in the program to a greater extent:

> There had been some talk of setting up a steering committee. It is unfortunate it wasn't done because we have a very large industrial area right in our own backyard.

Attempts to relate course content in the Math area to junior college requirements had been made with the help of a local junior college Mathematics instructor who would be the PreTech students' college teacher should they enroll at that school.

The Administration. The administration treated PreTech as much as possible like other programs that had to survive within the constraints imposed on the system. This attitude seemed realistic and understandable, particularly given the conditions under which the program originated. The principal summed up his feelings:

> If I could, I would spread a budget for innovations from department to department...We try to cooperate in all departments and that's what PreTech is supposed to be doing...It's like a continuous in-service training program. Of course, you don't get any credit for it, but I'm not really concerned about that.

Outlook for the Future. Although they had faced many problems with PreTech, the PreTech teachers seemed convinced of its value. The veteran teacher said, "It isn't that the program is failing--we're failing the students."

The youngest of the teaching team thought:

> If properly integrated and articulated, I think it can be a very powerful tool in fixing ideas and getting more meaningful work out of kids.

The counselor, who was still searching for clarification of program objectives, said:

> In my own way, I've always felt that basically curriculum should be adapted to particular student groups and needs and I think really this is the

> momentous step in this direction, tending to reaffirm this concept. It needs to be brought out in the open that this was basically good thinking and always had been good thinking.

Most of the senior students, at least, also believed in their program's worth:

> In my opinion, the PreTech program is the optimum course at Richmond High because whatever is taught you have time to learn...When I transferred into the PreTech program, the whirl slowed down just enough so I could understand everything I was being taught... It is difficult to determine how much you are learning when you are constantly learning...

The program's future was viewed with varying degrees of optimism. Some of the PreTech teachers were enthused about the possibility of applying interdisciplinary techniques to numerous other areas, including conservation, mineralogy, natural resources, and agriculture. Some counselors, however, thought it should be limited to interrelating courses in only Math and Science, thus allowing students more flexibility in choosing electives.

At the end of the 1966-67 school year, under the school district building program, Richmond High's junior and senior students were transferred to Ells High School, now called the South Campus of Richmond High. Its long range future will perhaps be determined when construction of a new school is completed; at that time the Richmond High staff will transfer to the new Richmond High School.

Today, primarily owing to two enthusiastic shop instructors, there are for the first time meaningful interrelated projects for the PreTech students. Students for the coming year are being selected in the first semester of the sophomore year. The candidates are placed in an Algebra review class in the second semester of the sophomore year to provide a better foundation for PreTech in the junior year.

With the firm support of the principal (who was the English instructor in the first Ells teaching team), the PreTech program at Richmond appears to have gained new life. The outlook is brighter than at any time in the history of the program.

El Cerrito High School

Origin of the Program

Pre-existing Conditions. Situated on the foothills overlooking San Francisco Bay, a short distance from the nearby University of California, El Cerrito High School is described by some as "operating in the shadow of the Campanile."* At the time of this study it had a student population of about 1,708. The educational climate of the school indeed appears to reflect the academic emphasis of that university, and the university continues to determine the content of most high school programs that are intended to qualify students for entrance. Most of the parents in the El Cerrito High School attendance area are employed in professional or managerial occupations and demand quality education for their high school offspring. Thus great pressures are put on the administration for this kind of academic preparation. As might be expected, these pressures were reflected in administrative, teaching, counseling, student, and parental reactions to the PreTech program's introduction at this school.

In the spring of 1964, at the same time the Richmond principal was asked to implement a PreTech program in his school, the El Cerrito High School principal was given a similar directive. His initial objections centered mainly on questions of the program's adaptability to the highly academic milieu of his school. Here, it was said, "the ultimate ambition of every parent is to send his child to the University of California." In direct contrast to the vocational orientation of Richmond High, El Cerrito stressed the importance of academic excellence.

The El Cerrito administrator, having been with this school since its opening knew well the kinds of status problems a PreTech program would face at this school. Teacher interest in a lower status program than College Prep would be an initial problem. Finding enough students interested in a program rated second by College Prep standards would be equally difficult. Some staff members felt there was not sufficient demand to warrant having the program and that the few students who would be interested should be transferred to either the Ells High School or De Anza High School programs. Other staff members doubted the program's value and felt an undue emphasis had been given to the development of the RP programs.

There was evidence of a very definite awareness of need on the part of some of the teachers and counselors, however. Long before the decision to introduce the program at El Cerrito was made, and shortly after hearing of its success at Ells and De Anza, several teachers had been probing about the possibility of adapting the program to their own school environment. One claimed to have participated in planning a similar type program several years prior to the Ells and De Anza introduction. Three El Cerrito staff members even visited the ongoing program, and one recalled later:

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* The Campanile is a tall, frail tower that dominates the Berkeley campus of the University of California.

> It sounded tremendously good to us....And I was really enthused about the possibility....And then all of a sudden before we had a chance to develop our own ideas--it was here....But it wasn't from growing up, it was from copying down....

These teachers felt that despite the high proportion of College Prep enrollment at El Cerrito a definite need did indeed exist for such a program. As one expressed it:

> I think people are kidding themselves if they think there aren't almost the same number of students in this school as in any other that need this kind of success-oriented educational experience.

Evolution of the Program. The first step taken by the administrator in implementing the program was a discussion with his counselors. General faculty meetings followed. Three teachers volunteered. One volunteer teacher, described as a potentially effective leader, was lost to the team when he transferred to a position as counselor in another school.

In the spring of 1964, shortly after the decision was announced to the faculty, student selection by basic RP criteria commenced. As one counselor recalled:

> ...The principal just informed us that we were going to have the program and that was that. There was no previous planning or preparation and we were told we had to select some students to set it up and that's the way it was started.

The El Cerrito counselors perhaps faced a larger problem in finding students than did their Richmond High counterparts. Many El Cerrito youngsters preferred to remain in College Prep programs even though many were barely getting by. Many parents were reported to be hesitant to give up the idea that their son could not succeed in the traditional College Prep track.

Students were recruited to enter the program when school opened in the fall of 1964. The teachers had received little or no training except that picked up through communications with the Ells and De Anza staff, but they endeavored to replicate the program's operation at these schools. As at Richmond High, they modeled their program on the basic concept of four teachers in English, Math, Science, and Tech Lab working together to interrelate subject matter.

Apparently, no strong team chairman emerged to provide team leadership. No common period was scheduled for planning, although the team met occasionally during that first year on their own time.

During the first year, the staff worked with the students, evaluating their comments and trying to resolve some of the problems that existed in the program. A counselor recalled:

> This was in the early stages when there were a lot of things that needed doing that weren't being done.... The kids recognized these apparently before anybody else did and they were able to say in a group why they weren't able to communicate to any single teacher or to his counselor: "There isn't enough carry over from one class to another....We haven't been outside the school yet....We thought we were going to see things in industry...Is there going to be a field trip?" That kind of thing.

Operation of the Program

> At this time, and as it has been all along, it is a completely separated program....It is not coordinated, we have not had regular meetings of any nature whatsoever; we do not have the same conference periods, the same lunch periods....There is very little opportunity and in many cases no desire to communicate. There is no cohesive planning, no direction, and no real pride in the program.

In these words, an El Cerrito PT teacher described the program at the time of this study.

Objectives. Despite the handicaps suggested above, the SRI project staff found the El Cerrito program attempting to follow the original objectives laid out by the innovators, to motivate underachieving students and provide more effective preparation for post-high school education. As in the other district programs, the emphasis was more on a broad general education than on specific preparation for technical occupations.

The PreTech Students. Seventeen juniors and 16 seniors made up the PreTech classes in the study year; most of them had come from tenth-grade College Prep programs and had changed because of their lack of success therein.

In addition to the status differential associated with the PreTech program at El Cerrito High, a problem similar to that at Richmond High existed in the student selection process. Here, too, counselors were still trying to define the characteristics of the "typical" PreTech candidate. Apart from the selection criteria established by Ells and De Anza, they felt a significant criterion measure was a "liking to work with his hands." But this also was a somewhat nebulous quality and difficult to isolate. Each year it had been difficult for the four members of the counseling staff to assemble students to make up a new junior class.

Conversations with the students toward the end of the 1966-67 school year indicated a fairly high level of dissatisfaction. In their minds, there was a discrepancy between what they expected of PreTech and what had actually happened.

The Teaching Team. At the time of the study, the team consisted of seven teachers (five male, two female). Three of them had been original team members, two had volunteered to teach in the program; five had been asked as part of their assignment. None had had any formal training.

Most of the teachers had gone into the program with a belief in its worth. They felt the most important attribute for teachers to possess in such a program was a sincere interest in the underachieving student. One said:

> You should be able to work with this type boy....I can see why people would have an awfully bad time with these kids, because they're not really interested in academics....Unless you make them see a reason for it.... So, I think you have to be willing to bend a little bit on your academic approach.

Another said:

> I think it all depends on your expectations when you come into the program. Here, if you come in thinking you are going to be in a team teaching situation or at least a group effort you are going to be so frustrated that you want to get out. This is a very frustrating kind of teaching, not only because it is not what you think it should be, but because this kind of boy is very discouraging to work with many, many times. And you think you are going nowhere for a long, long time. This is particularly true in the fall semester with a junior class.
>
> But you have to be without fear yourself--not afraid of ideas, not afraid of viewpoints, not afraid of people's pasts and their different cultural patterns. Then a tremendous sense of hope is created, and you have this for yourself and you have it for the kids, and this liberates you. And there are tremendous satisfactions if you are aware that this kind of

> boy is needed in society and that his potential is so incredible--they could do such exciting things; particularly the imaginative ones...

Although there was no apparent hostility between members of the teaching team, there appeared to be wide differences in philosophies in those early meetings that perhaps may have set a pattern for the years that followed.

The team, in short, did not function as a closely knit group, and there seemed to be no effective leadership capable of pulling it together.

The Curriculum. The PreTech students followed the class schedule outlined below (shaded areas indicate PreTech classes):

Period	Monday-Friday	
	Junior	Senior
1	United States History or Physical Education	Technical Laboratory
2	Algebra	English
3	Technical Laboratory	Chemistry
4	Physics	American Government or Physical Education
5	Lunch	Lunch
6	English	Trigonometry
7	United States History or Physical Education	American Government or Physical Education

In the year of this study, the only interrelated curriculum project was the junior class construction of a simple pendulum in the Tech Lab. The English teacher concentrated on technical report writing of other technical work done. More often, however, each teacher taught more as an individual than as a member of an integrated team.

The Counseling Function. All of the counselors and most of the teachers shared a belief in the program's worth and in the interdisciplinary concept of teaching. One staff member's comment fairly well typifies their feeling.

> The program itself is sound. I can see, for example, where it could be adapted very nicely to other areas--the commercial student, for instance....The basic idea behind it, I think, is great. It should go and if it doesn't I don't think it's the fault of the idea. Nor is it the fault of our program in the selection process. Now it may be that we simply don't have--as some people have suggested--the raw material at this school. But I think we do and I think we could sell it. I think in any school the size of ours you're going to find the kind of people who need this kind of education. I think with the proper kind of support, interest, enthusiasm--and I include the counselors in this too--that we could get a going group here.

The Administration. The El Cerrito administrator appeared to regret that the program had not operated more effectively, but still believed the PreTech students had benefitted from having been a part of it:

> They made friendships among them that they would not otherwise have had; these could be lasting friendships and may in the long run make a better citizen....So, I think it has done that for kids...who would have roamed the streets, who were headed in the direction of trouble but who made different friends than they were accustomed to having and I think it saved them.

The administrator believed the major sources of program difficulty had been lack of teacher initiative and enthusiasm, lack of funding, poor selection procedures, inadequate facilities, and lack of central place to hold team meetings. Beyond that he said,

> Something basic has been lacking, and I just haven't been able to figure it out.

One teacher, however, thought the basic problem had been:

> The administration's belief that we did not have enough students that were sufficiently interested in this kind of work because we have been a highly academic school for so long....

Outlook for the Future. The PreTech program at El Cerrito was discontinued at the end of the 1966-67 school year. There had been a feeling from the very start that the Richmond Plan was alien to El Cerrito, with its extremely heavy stress on college preparation. Perhaps the El Cerrito administration was right in its opinion that candidates for the program should attend another, more appropriate, school. As the program actually worked out, it appears the students would have been better off had that course been adopted.

SAN LEANDRO UNIFIED SCHOOL DISTRICT

- Pacific High School

SAN LEANDRO UNIFIED SCHOOL DISTRICT

General Background

In the fall of 1963, a PT program was introduced at Pacific High School, one of two comprehensive high schools under the jurisdiction of the San Leandro Unified School District. Located a few miles south of Richmond, this school district's area resembles the Richmond setting in some aspects. As in Richmond, the attendance areas of its high schools are clearly divided along lines of social stratification. Most of those employed in professional and managerial occupations reside in the "hill area" served by San Leandro High School. The attendance area of its second high school--Pacific--encompasses a large proportion of the flatlands on the east shore of San Francisco Bay where most of the area's major industries are located.

In contrast to Richmond, however, the total community of San Leandro at the time of this research reflected a relatively high degree of economic well being; it was not characterized by overcrowded housing, nor a preponderance of social problems. San Leandro, in fact, was considered by many a prototype of the successful California city in its many dimensions of growth during the post-World War II period. In this time, the area had changed dramatically from a semirural economy to the more balanced economy of a thriving urban center. Since 1947, its population had more than tripled, reaching an estimated 75,250 citizens in 1967.

The schools of San Leandro grew and progressed with the community they served. In 1952, the district was unified and during the year of this study comprised 11 elementary schools, two junior high schools, two comprehensive high schools, and one continuation high school. Total school population approximated 11,000 students at the time this research was completed.

Pacific High School

Origin of the Program

Pre-existing Conditions. When it opened in 1960, Pacific High School had an atmosphere of excitement. As one teacher described it:

> The school is only seven years old; there is no established tradition...The administration is not interested in making a plus mark on the superintendent's list about how many Pacific graduates go to college...It is interested in how many become productive citizens...So there is a climate of receptivity to anything that can do that job better.

From the first day of the school's opening, Pacific's principal was a strong advocate of curriculum reform. In his words:

> We've tried to employ teachers here who are interested in progress, who are generally dissatisfied with the status quo...And maybe my biggest challenge is to keep this faculty dissatisfied with what they are doing now, in order that they will be willing to try something new...We tell our people that there is no sin worse than doing nothing, and that they are going to have our blessing for any innovation they want to try as long as it has some reasonable promise.

Aware of the inadequacies of the traditional College Prep curriculum for many of the students in his predominately "blue collar" neighborhood, this administrator focused on improving the quality of vocational education offerings at his school. In 1962 a PTA committee was set up to study problems of educating unsuccessful students at Pacific High. Innovational approaches of all types were investigated and considered for adoption; nearby schools with problems similar to Pacific's were visited by the administrator and his committee.

Evolution of the Program. It was in this climate of change and experimentation that Pacific's PreTech program was introduced. The original idea apparently came when a science teacher, involved in upgrading the Physics curriculum, read an article in a professional journal describing planning then under way in two Richmond schools for establishment of a PreTech program. When the article was pointed out to the principal, he reacted with interest and set out on a course of exploration. Initial visits were made to the Richmond planners by a PTA committee and the administrative staff. Subsequently, key Pacific teachers also paid visits to observe and evaluate the ongoing programs, reporting that they appeared highly adaptable to the Pacific High environment.

Simultaneously with these visits, the Pacific administrator initiated a series of faculty meetings, featuring speakers who stressed the failure of public education to meet the needs of its youth. First, an industrial psychologist appeared with the message that educators were not giving students the kind of preparation needed by industry. Industry was, in fact, having to reteach basic math and science. Part of his message was, "Stop playing games...Tell the student what you expect him to learn...Hand out exams in advance." At first there was strong faculty resistance to his suggestions, but one teacher recalled, "He started me thinking about what I was doing in the classroom--was I really teaching?"

A second speaker--the technical institute educator who was in the group that originated the Richmond Plan--appeared soon after with a similar attack on established tradition and a plea for educational programs that might better serve the real-life needs of youth. It was here that the idea of a PreTech program at their school was first introduced to the Pacific faculty. Most were excited by the enthusiasm and commitment of the speaker; others, however, reacted with apprehension. Some resistance was centered in staff members who were concerned about the new program's possible effect of decreasing enrollment in their programs.

Other faculty discussions followed; more visits to RP programs resulted. According to one instructor, this introductory stage seemed to have been part of a calculated strategy on the part of the administrator:

> I think this was part of his propaganda push...He knew his faculty; he knew public relations...He was looking for volunteers, people who would be immediately interested in doing this...

If there were such a strategy, it proved successful. The first PreTech team was made up of three enthusiastic volunteers. A fourth team member was recruited. He freely admitted his preference for teaching academically superior students, but was willing to try the new experimental class of capable underachievers.

Only the problem of funding remained to be solved. In 1963, Pacific became one of 10 schools selected under a Ford Foundation grant designed to implement the program in a number of schools. The administrator recalled:

> With funding, we were on the ground floor...We had parental support as well as professional staff enthusiasm.

Parents had been included in the entire process of development; the PTA study committee had kept the parent body fully informed of progress on the proposed program.

The school district administration had also been kept informed as planning proceeded; the district superintendent actively supported the idea. Although the City Board of Education was made aware of the new development, it neither "helped nor hindered." According to the principal:

> This is a relatively conservative school district in terms of innovation...The Board, when we ask for something, generally listens very patiently and then acquiesces...

Final decision and approval to install the program was reportedly made at a meeting attended by the superintendent, the Pacific High administrator, his new teaching team, and the technical institute educator.

A counselor, also involved in planning, was given a lower load in order to have adequate time for the new program. Using basic RP criteria, both the counselors and the teaching team worked together in selecting students for the new program. A few students with severe behavior problems were included in the hope the program would aid in solving their problems.

The curriculum was formally designed at a summer workshop in which teacher time was covered under the Ford Foundation grant. Modeled on the original RP format, the program featured Science as its focal point, with Math, Tech Lab, and English revolving around it. As in the Ells and De Anza programs, curriculum orientation was on engineering technician training. In view of the socioeconomic composition of the area, this seemed especially suitable to the needs of the Pacific student population. There was not sufficient time in the workshop to write the entire year's curriculum, although several interrelated units were developed; nor was there time to visit industrial plants as had been originally anticipated.

Aside from curriculum writing, one teacher viewed the first summer workshop as a tradition-breaking session in which the teacher's role was redefined:

> We were all steeped in the idea of keeping an examination secret right up to the day you give it...and then testing the student's ability to answer questions that maybe you haven't even covered...whereas PreTech philosophy says that if you have something to teach, let the student know exactly what it is...then give him examples of what you are going to test for. What evolved for us out of the original idea is that maybe

> it's not the student who is letting himself down, maybe it's the teacher who is more to blame. So we had a philosophy of no failure. We went into the program on Cloud Nine--we were going to change the world.

Thus, a teaching team, armed with a new philosophy, pages of detailed curriculum, and the highest of ambitions, greeted its first PreTech class of 30 students in September 1963. There was no apparent resistance from the faculty, student body, or parents; no status problem existed to compare with that found in other schools. The apparent ease of introduction was explained by the administrator in this way:

> I think our philosophy at this school was a big help...We recognized we weren't meeting the needs of youngsters...We weren't moving ahead with the times...Technology, the demands, the labor market changes, certainly weren't reflected in changes in our high school curricula...Beyond that we also recognized that our teaching methods and the hardware and the approach were sadly out of date... PreTech was an opportunity to perhaps do something a little different...It might lead us, we knew not where...But we were ready to take the shot.

Operation of the Program

The SRI project staff visited the Pacific PreTech program during the school year 1966-67; the student population at that time was about 1,150. By this time, the program had graduated 43 students: 18 in 1965 and 25 in 1966. During the three years of the program's operation, there were changes in several areas; quite early in the program's first year, the team found its original expectations for itself and its students to be unrealistic.

Objectives. As in the initial PreTech programs at Ells and De Anza, long range objectives in the Pacific program had shifted away from the early emphasis on engineering technology. There remained, however, a stronger emphasis on occupational preparation geared to lower level industrial technology employment. With this exception, post-high school options for the Pacific PreTech graduate remained much the same as originally intended. Less mention was made, however, of eventual enrollment in a technical institute, which had been the initial stress. It was now hoped the students would be prepared for either a two-year community junior college program, or immediate post-high school employment in industrial occupations by passing civil service or apprenticeship examinations.

Basically, the program's short term goal was unchanged; it was agreed among the team that the program helped the students achieve "success" in high school, so fewer were "continuing to lose out as some of them were in College Prep." The team had found its original philosophy of no student failure a difficult one to adhere to, however. Initially, students had been unprepared for the carefully written curriculum units prepared in the summer workshop; lack of sufficient background and ability in math, in fact, had been responsible for the shift away from engineering to industrial technology. As one teacher recalled:

> The concepts that we thought were going to be easy to understand were not so easy. The Math program was pretty tough, and it was a comprehensive Science program that we had planned also. The students just weren't getting it and we had to back off. Many of the units that we thought we would be spending one week on, we spent four. In fact, after the first semester we went back and picked up again on many of the units we had gone through.

Three of the team members still adhered to the original philosophy that teacher failure rather than student failure was responsible if learning did not occur:

> With PreTech philosophy you keep saying to yourself--"If the students don't understand on a particular day let's try from another avenue... I thought it was only going to take a week but maybe I'd better take longer." And I think basically you start listening to the students quite a bit. What's your problem? Why don't you understand? All right, we'll try it again from another angle.

The other two members of the team differed in their thinking. As one said,

> I do think the whole philosophy of the program as it is written down is an excellent one. However, many programs on paper and as you talk about them sound very good, but actual practice is rugged, exceedingly more complex because you are dealing with human beings. I would say the shortcomings, the failings of the program lie not so much with the teacher, the administrator, or overall objectives, but more or less with the student involved in this program. He doesn't have the maturity, the drive, the initiative; he has to be pushed constantly by the teacher...You are dealing with youngsters who have shortcomings and this is what brings the program down to the different level than the aspirations we have set out.

The PreTech Students. The Pacific PreTech classes were comprised of 23 juniors and 19 seniors during the year of this study. Most of them had been enrolled in College Prep classes during the time of their selection in tenth grade. Little change had occurred in the selection process. Students were still being selected by basic RP criteria, variations being (1) a minimum I.Q. score of 110, and (2) an expressed interest in things that were mechanical. Selection was primarily effected by the counselor who continued to handle the PreTech program as his special assignment plus being given a correspondingly lower load. All counselors, however, screened records to identify potential candidates. Teachers of tenth grade Math and Shop classes were also asked for recommendations. PreTech teachers made occasional suggestions, but did not function actively in the selection process. After the experience of the first year, when a few severe behavior-problem students were included in the class, care was taken to eliminate all such problems in succeeding years. Because of a two-year commitment made by the student on entering, there had been some who felt "locked in." If, for example, a student were unhappy in one class, there was no other to which he could transfer. This sometimes led to behavior problems and teacher-student conflicts.

The teaching team was as divided in its attitudes toward group behavior as it was in its philosophy of student failure. Three teachers viewed the major effects of the PreTech students being together most of the day as positive. One said:

> I believe that the youngsters often take about the first semester of each year as a kind of joke. And I think it takes awhile to settle them down to work to the point where they do start to put it out...There is a different kind of learning atmosphere that these youngsters need. I feel they can learn under a variety of atmospheres that are normally considered non-conducive to learning. And I think that they have to have a little more freedom.
>
> Some of the stuff we take them through is tough material. And when these kids run up against a tough situation, something they don't understand and that is frustrating to them, they react with nervous and very active physical behavior. Loud talking, things of this sort and you get different clues as to what they are learning and what they are not learning. Sometimes this leads to a very noisy classroom. Yet, once they get involved, once they get interested, that class can become so quiet because of their interest in the situation, you can hear a pin drop. It's pretty easy to stimulate these youngsters into activity...
>
> They tend to worry about what others think of them as a group and we try to build them up...

> I think I know them better than most College Prep students. I think they tend to open up in my class rather well. They air quite a few of their gripes, and we take time to do this now and then. If they seem upset about something, I take a little time and listen to them. I can learn a lot by listening to the kids. Sometimes it gives me a chance to capitalize on what they are thinking about, to do a better job on the lesson when we finally do get to it. I suspect they figure they have me about where they want me every once in awhile. This is probably sometimes the case. On the other hand, I usually use it to my advantage.

For the other two teachers, however, group behavior had been a problem of large proportions. One expressed his feelings about his PreTech students this way:

> There's kind of an infantile behavior to them you know...They just have to get up and perform for each other and get your attention. It is just amazing how they will wander around or pull some little stunt. I was told at the beginning of the year not to rub these kids the wrong way...And then the principal and vice principal came in to view me, and felt I was too strict with them. I mean, if kids threw paper in baskets from the back of the room they felt this was a minor thing...I think if these students were in a College Prep class they would get more out of it; there would be girls and they would behave better. Here the top kid gets overrated; he thinks he is better than he really is because he compares himself with the other kids in this Pre-Tech class...They might even get more out of a good solid shop class...These shop teachers do not tolerate any fooling around.

The Teaching Team. At the time of this study, the teaching team was comprised of five members. One English, Math, and Tech Lab instructor each taught both juniors and seniors; two Science teachers divided the junior and senior classes. All teachers were male, with teaching experience ranging from six to 20 years.

The original program volunteers continued to be eager about their participation, as did the teacher who was new to the program. However, the teacher who had not voluntarily sought participation on the first team continued to accept his assignment out of a sense of duty. As he said:

> If I had a choice, I would rather not teach PreTech. I don't get the greatest satisfaction from working with this type of student. I don't get the response. I would prefer actually to work with the more academically inclined, with the College Prep.

Another teacher, new to the school, also preferred the academically able:

> I thought these kids were more capable than I found them to be...I was going to quit this job right in the middle of the year but reconsidered because there were a number of motivated kids participating in the College Prep program that would have suffered.

During the first year of the program, frequent team meetings were held, often daily. In the second year, however, these became less frequent. The thought was expressed that pressures from either the administration or team members in that second year had led to a certain amount of resistance by some teachers who felt there was no need to meet regularly. By the time of this study, few if any formal team meetings were being held and communication among the team was generally limited to informal discussions between two or three staff members, as needed.

The same division of opinion appeared again regarding the question of need for team meetings. The same three teachers thought it would be desirable to have structured meetings when appropriate, but felt there were basic difficulties inherent in getting together. One of these believed team meetings were essential during a program's first year of operation, but that perhaps a natural decline was inevitable after teachers have worked together over a longer period of time. Their two colleagues questioned the importance of team meetings; one even expressed disbelief in the concept:

> I don't believe in the philosophy of a team first of all. I'll be as cooperative as I can, but I don't believe in trivialities, material which is unimportant...I'll get disgusted with people that don't have the same idea that I have or don't understand the problem as I see it. And if I get a lot of trivial work to do I tend to ignore it...I say I'll do it, but when I get to class I just ignore it because I say "It's not going to work, I'll do it my way, which I know is going to work." Of course, there's no way one can control you, once you are in a classroom...That's the reason I can't function well on a team.

The Curriculum. The Pacific PreTech students followed the daily schedule outlined below (shaded areas indicate PreTech classes):

Period	Monday-Friday	
	Junior	Senior
1	Mathematics	Technical Laboratory
2	Science	English
3	English	Mathematics
4	United States History or Physical Education	American Government or Physical Education
5	Technical Laboratory	Science
6	United States History or Physical Education	American Government or Physical Education
7	Advanced Drama - Advanced Music - Band	

As previously mentioned, the curriculum units developed in the summer workshop had proved too advanced for the level of ability of most students. Many of these units, however, were still being used but not as fully as originally planned. A sample of the unit on sound is shown in Table 4.

One teacher who had been distressed by many aspects of the program especially seemed to resent the fact that although his subject matter was viewed as the program's focal point, he had been given no materials to work with; he was at a loss to know how to operate. He also complained of conflicting ideas of course content:

> Strictly speaking, [my course] is not technology or application. In fact the new textbooks...have less and less of the applications...I just got sick and tired of having superiors tell me I am supposed to be the central thing here....

Table 4

SAMPLE PACIFIC HIGH SCHOOL PRETECH PROGRAM (Grade 12)
Interrelated Subject Unit: Sound

Science	Math	Tech Laboratory	English
Nature of sound ● Source, medium, effect, velocity, application of sound Mach number and sound barrier	Arithmetical and harmonic progression, especially as the progression applies to the physics of sound Solve for any two missing elements provided the other three elements of the progression are known	Wave motion ● Design and test various geometric objects to study wave motion Harmonics Overtones Propellers (whip) Sound barrier Test and analyze sound waves and measure	Grammar Writing ● Tech laboratory reports, business letters, abstracts, expository compositions Oral reports Reading ● Literature as it relates to American history; American literature as it relates to technology Spelling Vocabulary

Although all teachers attempted some degree of subject-matter integration, any consistent integration was found difficult due to the lack of a regular time for team meetings. Whatever the team's problems in relating their subject matter or meeting as a team, all believed that the PreTech students were, at least, being exposed to academic subjects they otherwise would not have had. All but one teacher believed that interrelated work enhanced learning and was important to the program; to one it was the single most important feature in motivating students.

The curriculum's occupational orientation included classroom discussions about employment requirements in various job categories. The English teacher, especially, spent time on such projects as classroom debates on the merits of apprenticeship versus college attendance, and tape-recorded talks on job descriptions and content. About 6 field trips had been taken to local plants. Other than those, industry participation in the program had been limited to occasionally sending representatives to speak to PreTech classes. From time to time, program graduates had returned to the school to share their work experiences with the enrolled students.

Junior college articulation appeared to be a weakness of the program; all teachers expressed regret there had been no direct tie-in with the local junior college. One counselor, however, had proved helpful in coming to the classroom to explain the programs offered at the college.

The Administration. All teachers on the team believed the administrator provided the backing needed. One said:

> If it weren't for our administrative support I think this program would have been dropped. The Tech program is a lot of work...And if you don't get some kind of backing, you get discouragement. There is no reason that I can see of for a teacher to bang his head against a wall just to get something he wants and he thinks is good for children if he gets thwarted at every turn. It is an essential factor.

The administrator viewed his role as one of demonstrating his support for the program in a variety of ways: participating in teacher supervision, taking final responsibility for teacher selection, and participating in team meetings that deal with problems of specific concern to him. He believes the program should "stand on its own two feet" and that, in fact, it is doing so.

Outlook for the Future. The PreTech program at Pacific High began under nearly ideal circumstances and it continues to have strong support from the school administration and the staff. However, an appraisal of the program, by the principal, including discussions with students and faculty, led to a decision to modify it. The major problems were:

1. Reduced number of students interested in PreTech
2. Lack of electives for PreTech students
3. Restricted movement in and out of the program
4. Lack of opportunity for students to take selected part of the PreTech program.

The following changes* were approved for implementation in September 1968:

1. Present 11th grade PT students will continue through Grade 12. The program will be modified by permitting an elective and dropping Shop Laboratory. The elective will be restricted as shown below. Also, the mathematics portion will be Trigonometry in place of the former required Math.
2. Effective September 1968, students interested in technology may enroll in one or more of the courses listed below. They will be counseled to complete the pattern, but not required to do so.

   Other students will be admitted to those courses which meet their needs and interests.

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* Personal communication from the principal of Pacific High.

The Technical Major Program includes the following courses:

Grade 11		Grade 12
Social Studies		Social Studies
Physical Education		Physical Education
English (regular program)		Technical English
Technical Math	Order may be reversed	Trigonometry
Applied Physics		Applied Chemistry
Auto (beginning)		Auto (beginning or Adv. of 1 hr course available)
Drafting I or II	Choose one each year	Drafting I, II, or III
Metal I or II		Metal I or II
Electronics I or II		Electronic I, II, or III

Physics and Chemistry will be certified to meet University of California entrance requirements. The entire sequence is required for completion of the Technical Major.

PALO ALTO UNIFIED SCHOOL DISTRICT

- **Cubberly High School**
- **Palo Alto High School**

PALO ALTO UNIFIED SCHOOL DISTRICT

General Background

The Palo Alto Unified School District takes its name from the City of Palo Alto, located in Santa Clara County. The city lies along San Francisco Bay and ranges up to the foothills of the Coast Range. Its population of over 60,000 includes a larger than average number of scientists, engineers, and professionals. Located nearby are major universities, including Stanford University, which has boundaries contiguous with the city. The economy relies heavily on advanced aerospace, electronic, and computer-related industries.

The district was founded in 1893 as an elementary one. In 1936, all the schools were unified including kindergarten through the twelfth grade. The district includes 775 classroom teachers and 43 principals, assistant principals, and deans. The current enrollment is about 16,000 in 21 elementary schools, three junior high schools, three senior high schools and one continuation high school. The average class size is about 26 and the student counselor ratio is 360:1.

The city and the district are proud of their school system. Over three-fourths of the students rank above the national median on standardized tests. About 85 percent of its high school graduates go on to college. The district regards itself as innovative and experimentally minded. Pioneering efforts have been made in language instruction, computer services, team teaching, and gifted children programs.

In this climate of innovation, one of the district high schools--Cubberley--adopted the RP, followed by Palo Alto High three years later.

Cubberley High School

Origin of the Program

Pre-existing Conditions. In 1963, Cubberley High School, like Pacific High School, became one of the 10 high schools funded by the Ford Foundation's grant designed to test the PreTech program's feasibility in schools of varying socioeconomic conditions. Unlike Pacific, however, with its "blue collar" attendance area, Cubberley is located in a highly scientific academic complex, about five miles from Stanford University. In socioeconomic status, Cubberley most nearly resembles El Cerrito High, which is also situated near a major university complex renowned for its academic excellence. Cubberley's student enrollment in College Preparatory programs is about 85 percent, as compared to El Cerrito's high of 75 percent.

There is little evidence, however, that at Cubberley High School status was the inhibiting factor it had been at El Cerrito. It is difficult to determine what accounted for this differential, given the similarities in the socioeconomic status of the two schools. The educational climate established at Cubberley during the years since its 1956 opening may, in part, have accounted for the relative ease of introducing the program there. One staff member said:

> This school is characterized by involvement in everything. I have been here...for over 10 years now, and during that time this school has been almost continually involved in a number of experimental programs. This is a rather sophisticated student body...They're different when you look at them, and all kinds of different things go on here...So it was nothing unusual to have a segment of the curriculum devoted to something of this type and I don't think it caused the student body or the faculty much concern...It was just another one of the things that they do here.

There had been, since the school's opening, a special concern on the part of the Cubberley administrator for the unmotivated students who weren't succeeding in highly academic programs. Serious discussions regarding the needs of these students were held between the administrator and his instructional staff as early as 1958; in that year, a group of teachers known as the "Gray Committee" began studying these needs. One committee member recalled:

> We were interested in the forgotten kid in the gray indefinite area between the very able and those needing a great deal of remedial work... We hadn't really identified exactly what students we were looking for, except the kid who was doing less than he should be. Long before we ever heard of the Richmond Plan,

> we were trying to develop a philosophy of instruction for this type of student by use of a teaching team.

Evolution of the Program. At the same time, the Cubberley principal (since promoted to district headquarters), while attending a Saturday meeting of Bay Area educators, heard a technical institute educator give an enthusiastic presentation of the proposed Richmond Plan. Recognizing the similarities between its philosophy and his own committee's thinking, an invitation was extended to the speaker to visit Cubberley to explore mutual interests. Speaking to the faculty on the Richmond philosophy of instruction, he interested the Cubberley planners in more specific action. Visits were made to the innovating Richmond schools throughout 1961 for more detailed discussion and planning.

In the fall of 1962, Cubberley teachers were asked by their administrator if they were interested in starting an interdisciplinary program at their school. Volunteers were appointed to an RP committee. More visits were made to the programs that were then operating in the two Richmond schools. One recalled:

> We spent a considerable amount of time meeting with teachers from the original programs...Each of us visited the programs at least one full day following the students through all of their classes. And we tried to fit this in with what we thought were the needs at our own school.

Having been advised by the Richmond groups to design their own program--to become, in effect, innovators on their own--the Cubberley team proceeded to hold regular meetings from 7:00 to 8:00 a.m. twice weekly during the 1962 school year. As one recalled:

> We spent many, many hours on our own time trying to identify our objectives...We'd argue philosophy and get no place...It's difficult to bring a group of teachers together and get them to come to grips with the same philosophy of education. You have to be willing to change...Stop overnight...Start again in another direction...And in the Richmond Plan philosophy, you have to forget the academic structures as we have known them.

During this period, a high degree of administrative support was extended to the team. As described by one teacher:

> Our principal was largely responsible for getting this program started...He gave very freely of his time and effort working with us almost constantly in our group sessions, especially when we were having difficulties formulating a philosophy.

In that initial planning year, an advisory group was set up consisting of three local community college instructors and three representatives from local industries. At early morning breakfast meetings held throughout the year, both teachers and committee members sought relevant answers to such questions as: What does the junior college expect of our graduates in the way of academic preparation? What does industry require of them for job preparation? Is our plan feasible?

One counselor--assigned to the program because of his interest and at his request-- worked closely with the team in its planning sessions, playing a major role in developing student selection procedures. As he recalled:

> It took me almost a good month of time; I had reams of material at each point...The deepest analyses of each student were gone through in that first selection process...Eventually, I became primarily responsible that first year for student selection...We tended to take boys who were above average in Science and Math.

The Ford Foundation provided a four-week summer workshop in 1963 and 1964 where, as at Pacific, teachers initially struggled to break down traditional barriers to interdisciplinary thinking. The curriculum emerged as a modified version of the Richmond Plan with its usual combination of Math, English, and Science, with Metal Shop substituting for Tech Lab.

There was basic disagreement among that first team as to the program's objectives; some thought the major focus should be on specific preparation for the working world. Others disagreed, preferring to view the basic concern as high school achievement:

> I didn't think we should even be concerned about college or employment...The major goal seemed to me to be in awakening in the student an interest that would help him assume a better attitude toward school.

As at Pacific, the team expressed regret there had not been sufficient time to do all the planning and curriculum writing they might have. Even so, however, they were able to develop a working curriculum with detailed specifications for interrelating units. They approached the first Technical Preparation (TechPrep) program class in September 1963 with high ambitions and expectations of "integrating everything in the curriculum." As yet, however, there was little real consensus on the program's goals and philosophies.

Operation of the Program

Objectives. The SRI team began its study at Cubberley in the spring of 1967, four years after its inauguration. The student body at that time had an enrollment of about 1,200 students. The early confusion and disagreement concerning objectives had been fairly well worked out. A comment of one of the staff summarizes this process:

> We've given up some objectives and added others but... there's been a shift in emphasis. When we first started the program, I think we conceived of it much more as a technical training program, that we actually were going to train technicians...as we've gone along, we've gotten further and further from that and more and more toward the view that what we are really doing, hopefully, is remotivating students, reinteresting them in the educational process...We are less interested in their final choice of work and more interested in the fact that they come to the point where they want to make choices, where they reinterest themselves in the whole process of learning and where it's taking them.

One dissenting teacher still believed that more occupational stress should be placed on program objectives. As he said:

> I don't like to have us producing boys that are going to thrash around for years before they even consider orienting themselves to a job. I would like them to begin making plans now, and although they may be the wrong plans, they probably won't think on a better basis four years later after they have gone through college.

The TechPrep Student. At the time of the SRI study, the selection process included a ranking of candidates in order of preference by the TechPrep counselor (with help from the other four counselors). The teachers ranked the students in order of their own preference. From this list of candidates, students were selected and sent letters notifying them of their inclusion in the program. Sixteen students were in the junior class, 13 in the senior.

The selection process, teachers felt, had been refined about "as far as they could go;" most of the original problems in this regard had been ironed out. They were considering, however, returning to the procedures used in one year where each student had been interviewed individually by the entire team of teachers. One teacher felt this had had psychological value in giving the student a feeling that he was "going through something to get into something very special." At the time of this study, the TechPrep seniors were becoming involved in the selection process. As one teacher described it:

> This year we were asking the seniors to sit in on final selection; in fact, they asked to do so. They feel that the program is a good one and they want to see that the right boys get into it. We're interested to see how they are going to respond in the interviews with the

> selectees...We have enough faith in them, that we're going to invite them to sit with us and go over the applications.

The Teaching Team. The teaching team consisted of seven male teachers, only one of whom had less than five years of teaching experience; experience of the other six ranged from six to 20 years. Two of the team members were part of the original planning group. Three volunteered to teach in the program because of their interest in the new approach; one of these had been in TechPrep as a student teacher and requested an assignment when he returned feeling he could "do things that were important to education." The other four reported that they had willingly agreed to teach when asked by the administrator.

With the exception of the 1963 and 1964 summer curriculum workshops attended by three of the team members, none had received any formal training. In the summer of 1965, however, the Palo Alto Unified School District had supported two teachers to work on curriculum writing for a two-week period.

During the year of this study, no common conference or lunch hour period was scheduled; the team got together on an informal basis whenever necessary. In the first year, the team had a common lunch hour in which they met weekly but the lack of consensus of program philosophy in that year resulted in unsuccessful planning sessions. As the counselor recalled:

> This was one of our early problems--we each came with our own, very necessary things to discuss. I had problems I wanted to share--a boy had begun to slip or something had happened outside of school that I felt we should all be involved in helping to solve. Somebody else would come with a curriculum problem--the coordination wasn't working well at that particular point or how do we do this next step? We found that this was just too much. We now usually set the ground rules before we meet.

In the years since the program's origin, the team had departed somewhat from its original emphasis on student involvement in program planning. One teacher recalled:

> The first year we spent too much time letting the kids criticize the program. Trying to get them involved, you know, trying to be real democratic...soon they spent most of their time finding things wrong with it. And if you keep telling somebody what is wrong with something, pretty soon they are convinced it isn't any good...We had times when the kids were very critical of the teachers, because we invited it. And this was a complete mistake...not the kind of

> relationship that should exist between teachers and students...We don't have any of this this year. If they want to come and complain, we'll listen, but we don't deliberately set up situations for them to pour out their troubles.

The Curriculum. In the initial years, the TechPrep class schedule was a typical pattern of five classes and regular Physical Education held daily during the same periods. During 1966-67, however, the schedule was amended to provide an elective for the TechPrep students. This was accomplished by reducing the number of hours spent each week in four of the classes from five to four hours. The four hours gained were applied to an elective through a complex schedule that changed daily, with English irregularly scheduled. A typical daily class is shown below (shaded areas indicate TechPrep classes):

Period	Junior	Senior
1	Technical Laboratory or Drafting	Technical Laboratory or Drafting
2	Physics	Elective
3	Elective	Government
4	Math	Physics
5	United States History	Math or Elective
6	Physical Education	Physical Education

There had been a shift of curriculum emphasis since the program's first year. Although the team had started with high ambitions of integrating subject matter, they soon found this expectation impractical. As one member recalled:

> We tried a lot of ambitious things...Some worked. Some didn't. We tried a lot of different things, that were difficult to integrate, if not impossible. The integration of the program has always been one of our difficulties. It simply breaks down during the year...We have units where we have integrated. But because of the lack of flexible scheduling, the fact that all of us are departmentalized, and the difficulty of really getting together, we now try to integrate only whenever it's possible and important to do so.

All teachers but one believed that the concept of interdisciplinary teaching was vital to program success, but that it was almost impossible to effect any more integration than they had without a common meeting time for planning. As one said:

> Any time you interrelate courses, for every hour of interrelation it takes a few hours of planning and evaluation. But you won't get more unless you specifically set time aside for teachers to meet every day. If you want this sort of interrelation, somebody has to pay for it...You've got to pay for it by buying teacher time.

Two teachers believed the program was perhaps more operable and realistic under these conditions than it had originally been. Curriculum units had involved construction of electric motors, amplifiers, slide rules, drill gauges, and a transit unit--"Mt. Cubberley"--which is outlined in Table 5. Between the structured units, teachers related subject matter whenever the occasion warranted it. Social Studies had proved a valuable addition to the curriculum; most of the seniors felt it was their favorite course. Here, in keeping with the progressive nature of the community, representatives of various political movements had lectured. Students had conducted a time-motion study of the school janitorial service; a survey of current and alumni TechPrep students had proved valuable in program planning.

Despite the fact that the program was not focused on specific occupational training, a large amount of exposure to future employment opportunities was featured in the Cubberley program. The industrial advisory group set up in the early planning year had continued to function through the years of the program's operation, meeting with the team on a fairly regular basis. The later inclusion of drafting in the curriculum resulted from a strong recommendation of this advisory group. Industry representatives had come to the classrooms to discuss the needs and requirements of various technological occupations.

Although an early plan to place each boy in a working industrial job situation for two weeks each year failed to materialize, under a city-wide Research Observer Program two TechPrep boys worked two hours every day with engineers and technicians in local firms. The work experience coordinator for the school district cooperated in securing part-time jobs; area industry gave preferential treatment to TechPrep students for summer jobs. Throughout the course of the school year, each class took four field trips to area plants.

The program also featured a working relationship with the local junior college, which sent counselors to the classrooms to discuss curriculum offerings there. Registration for the graduating seniors was accomplished in this manner. TechPrep students also visited the junior college classrooms to determine the level of difficulty of the course offerings there.

Table 5

SAMPLE CUBBERLEY HIGH SCHOOL TECHPREP PROGRAM (Grade 11)*
Interrelated Subject Unit: Mount Cubberley Survey

PHYSICS	TECH LABORATORY	MATH	DRAFTING	ENGLISH
Devise method to survey "Mount Cubberley" in order to determine its volume and weight	Construct and calibrate the measuring equipment to be used in survey and removal	Compute volume and weight of "Mount Cubberley" Determine cost of removal	Draw equipment to be used in removal of the dirt Draw contour map of the mountain Draw a three-view drawing of surveying instrument Design and draw up a parking lot plan for area	Write a business letter announcing organization of company† Write a proposal setting forth, in detail, the method to be used in the survey and removal Write cover letter Written reports Oral reports

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* "Mount Cubberley" was a sizable mound of dirt located at the rear of the Tech laboratory.

† The class was divided into groups of three, each group becoming an engineering firm, division of responsibilities was then determined within each firm.

One of the staff members, trying to get at the basic nature of the TechPrep curriculum, thought the courses were less important than the sheltered environment the program provided. As he put it:

> We put them [TechPrep students] back a little bit in a program that's reminiscent of junior high or grammar school in that it's a bit more self-contained...I think you could say that it's a little of the hot house environment for a while in that they have perhaps not been ready for the expanded program [in high school]. They get lost in it [the regular program], maybe they feel it's very impersonal and so in a way we've gone back to something that is more personal, more supportive, more involvement with the teachers, and obviously the student gets to know his teachers much better over a two-year period.

Another staff member viewed the "hothouse environment" as having negative implications:

> A lot of these boys had their problems, from an academic point of view, starting in the fifth or sixth grade. Up to this time, they had been in a more or less heterogeneous grouping. They have been low achievers, but the reason...is because they have learned a behavior pattern, which is consistent with being out of touch. In the past, they [TechPrep students] have been able to hide behind this silent anonymity that they have cloaked themselves in, and they just sit there. In a normal class, the teacher learns after awhile that this boy is a nonparticipant, that he isn't going to give any trouble as long as the teacher leaves the child alone. And because there are 29 other kids in the class who are learning and need the attention of the teacher, most of the time the teacher will take the easy way out and leave these boys alone...And so a lot of times they have never been identified as behavior problems as such.
>
> But they certainly do not develop any study habits, they live in a completely isolated dream world, and they are completely safe until you take them out and put them together. And then they have nobody to hide behind. And so you put them in this program, and you strip away this shield that they have built up around themselves and you say, all right, now learn something, tell me something, tell me what you know. And it is extremely disturbing to them and they have nothing else to do but to really try to fight back.

Yet another team member stressed the positive effects of the "hothouse":

> One thing I observe is that these kids are so motivated... that you have no problem of class control; at least, I have not had this problem. I would place the fact of learning to adjust to one another as far more important than any kind of subject matter that we could give them. And there is a much more personal relationship involved here with the teacher...I suppose, depending upon how the teacher looks at the problem of how he handles the class, this could also be detrimental...Because you get too personal...Some teachers worry about it. I don't worry about this thing myself. I think kids know when you demand certain kinds of conduct and I think they respect you for it. It depends on you.

The Counseling Function. The TechPrep counselor at the time of this research continued to function as an integral part of the team; all teachers viewed his role as essential to the effective working of the program. They felt it especially helpful that his detachment from the actual teaching situation provided an element of objectivity. All felt that the kind of counseling services provided to the TechPrep boys was superior to that received by most students in the school. "TechPreps get the benefit of tenfold increase in counseling." In addition to problem-solving and guidance, he handled all parent communication, gathered necessary data from whatever source necessary, attended team meetings, and worked closely with the team in selection of students. The effectiveness of the counselor as a member of the TechPrep team was stressed by one teacher as follows:

> ...he...is the one guy, the one source you can go to,... and we need a source...It could be the team leader... But he has his own headaches. We need someone detached from the actual teaching who can prod us along. If it wasn't [the counselor], it would have to be the principal, as I see it, to make this program effective.

The Administration. Administrative support to the team was described by most as excellent. The administrator viewed the program from his perspective as follows:

> Actually, the students are pretty much treated like any other students...It's kind of, almost, a separate department. There are no unusual problems. It's actually very little administrative burden for me; considering the benefits derived, it's one of the easiest. The cost-benefit ratio is one of the greatest I can think of, because it doesn't cost me much time and money to have the program.

Outlook for the Future. About one-half of the 1967-68 junior class (one year after the SRI study) decided to drop TechPrep at the end of the first year. The teachers and the counselor did their best to find out the reasons for this highly unusual rate of withdrawal. Each student was interviewed and asked to fill out a questionnaire in an effort to determine if there was a common factor accounting for the shift. The results were inconclusive. The best guess of the team chairman and the counselor is that the dropouts simply "found themselves" and felt capable of re-entering the regular high school programs.

As a result, no senior class is scheduled for 1968-69--the TechPreps who remained in the program were transferred to other programs. However, a new junior class will begin in September 1968. The teaching team seems confident that TechPrep will continue as usual, despite the loss of one class. But the shock of this unexpected event will probably prompt reappraisals of the program by the teaching team.

Palo Alto High School

Origin of the Program

Pre-existing Conditions.

> We're in a privileged high school here...Cal [University of California at Berkeley] is supposed to admit, you know, the top 12-1/2 percent, according to the Master Plan of Education. We qualify anywhere from 20 to 30 percent every year for admission to Cal...The state colleges [in California] are supposed to admit about one-third by their admission criteria. We qualify well over one-half of our seniors, sometimes up to 60 percent.

This statement, made by one of its staff members, underlines the image of Palo Alto High School as an elite school in a prestige community. The school, with a student body of about 1,450, is located in the "old section" of the city and serves a well-above-average clientele. The community and the school staff pride themselves on being part of a first-rate school for preparing students for higher education. Compared to the other two high schools in the Palo Alto Unified School District, Palo Alto High does send a larger proportion of its students on to colleges and universities.

Despite this stress on the importance of university preparation, the principal of Palo Alto High has a commitment to the idea that the less capable students must also be served. As he said,

> ...The teachers have to be flexible and willing to accept kids who have been failures. It's easy to teach a kid who is motivated. I keep challenging my staff and telling them that if they want professional salaries and want merit pay, or don't want it, either way, that they ought to act like they are professionals and that they ought to come in and say, "I'd like to tackle some of the hard problems, I'd like to have some of the tough classes."

This interest in the average student is reflected in attempts to have the various academic departments accept total responsibility for teaching the less capable students. In the English Department, for example, the chairman appoints a committee that rotates teachers so that each has a share in teaching the average or below-average student. Although not all departments accept this idea, the principal reported that he was making headway.

The Palo Alto High administrator had watched RP developments at his sister school--Cubberley High--with great interest. Some of the teachers at Palo Alto High had visited schools in the Richmond Unified School District, as well as Cogswell Polytechnic Institute. This, they felt, sensitized them to the needs of the average student. To some extent then, a receptive climate existed at Palo Alto High when the idea of an RP program was first suggested.

Evolution of the Program. A coincidence provided the initial spark for the development of the Richmond Plan at Palo Alto High. A graduate student from San Francisco State College with an intense interest in the RP programs was doing his thesis work here and, at the same time, was associated with an experimental teacher training program at the college concerned with interdisciplinary teaching. On coming to Palo Alto, he had rearoused interest in the RP programs.

In collaboration with the principal, the graduate student worked on a tentative plan to begin an experimental RP program in Aeronautics. Although a great deal of planning for this program was accomplished, it was never launched because not enough interested staff members could be found to warrant proceeding.

The graduate student next suggested that a program be inaugurated in the area of Graphic Arts, his major field. This time,under his general direction, a team of interested teachers was assembled, featuring teachers of Photography, Commercial Art, English, and Graphic Arts, the last being taught by the graduate student. The program was given the acronym of GREAT (Graphic Reproduction Education and Technology).

The CTE at San Francisco State College played a prominent role in the early development of the GREAT program. With help from the CTE, the Palo Alto team formed an industrial advisory committee consisting of representatives of union print shops and specialized graphic arts shops.

The teaching staff--all volunteer--was trained during the summer of 1966. Finally, the district provided a released period for the team to meet for one period a day during the program's first year. In September 1966, GREAT began what was to be a short span of existence at Palo Alto High.

Operation of the Program

The SRI team began its study in May 1967, after nearly a full school year of the program's operation at Palo Alto High. The period in between had seen some very rough times indeed. As one teacher said,

> ...the first six weeks we just about lost all of our students. We were so oriented to our individual subject areas, building a foundation for our individual subject areas, that we just couldn't get into correlation to begin with. It wasn't until after that six weeks that we really began to realize...what we

> were doing. We began then to take a quick look at ourselves ...And finally we said...we must get rid of this whole first six weeks and jump right into it and forget about it and let them experiment. If they make mistakes, all right, they'll learn from their mistakes...So, we had already lost half of the class by then...because they had associated it, not as a correlated course, but as...four isolated courses that weren't really interrelated.

By the time SRI began its study, seven students had dropped out, primarily because of the problems in the early weeks of operation. An additional blow came with the loss of the English teacher from the GREAT team. Although declining to take part in the team activities, the English teacher continued to teach traditional English to the GREAT class. However, the team had solved most of their problems and things were operating in a relatively smooth fashion. At that time, GREAT's program consisted of interrelated courses of Photography, Graphic Arts, and Commercial Art. These three classes were scheduled in the second, third, and fourth periods of the day.

Objectives. GREAT was conceived as a project-oriented technological training program. The major objective was to prepare its students for either future training in graphic arts or in immediate employment on graduation from high school. It was primarily based on a demonstrated need for workers in the field of graphic arts and communications, a rapidly expanding field of industry and technology. In keeping with the RP philosophy, the underlying rationale of GREAT was to provide a realistic alternative for average students who were marginal performers academically.

Aware of the status problem that was likely to accompany the introduction of GREAT, the team took care to ensure that their program was not labeled as "vocational." As one teacher said:

> Here under the shadow of Hoover tower [Stanford University] you have to be a little careful about these things. Richmond talks about their theme; Pretechnical as a vocational type course. If we were to mention vocational, the walls would fall down on us; there would be an upheaval of the earth...

The teaching group stressed the fact that the GREAT program was not designed to salvage dropouts; nor was it for students who were seriously maladjusted or emotionally disturbed. Rather, it was cast as an educational opportunity and a conservation program.

The need for something like the GREAT program was expressed by a staff member as follows:

> I've felt for a long time that the orientation in this high school has been far too one-sided. An awful lot of our kids do quite well. But we also have others with capabilities who are just overwhelmed by the competition they have here: at least one-third of our kids are underachievers. They've never really known the real satisfaction of being on top...Not necessarily failing, but if you try real hard all the time and you're only average or below, and you always feel yourself surpassed, you're not very enthusiastic about school or yourself. And then they go home and get all this pressure from the adults that are closest to them like "study better," "work harder," "why don't you get a few B's?"

The Students. Most of the GREAT students were screened and selected during the spring semester of the tenth grade. The explicit criterion given by the GREAT teachers was that candidates be marginal College Prep material. It was stressed that the students should be capable but not achieving up to their potential. The team leader of the GREAT program pointed out that parents, students, fellow teachers, and counselors never fully comprehended what kind of students the teaching team was looking for. The teaching team placed the blame on themselves for inadequate communications in this respect. At the same time, they stressed the fact that the GREAT program was not designed to salvage dropouts, or students who were completely unable to adjust to the routine and requirements of school, nor was it for students who were seriously maladjusted or emotionally disturbed. Thus, the program was not cast as a therapeutic program nor as a cure-all but rather as an educational opportunity and a conservation program.

The selection criteria actually used included test scores, current grades, teacher recommendations, and counselor recommendations. There was some feeling among the teaching team that the counseling staff had not used the criteria agreed on in selecting students.

The 87 students who had been identified and called together were invited to attend an evening meeting with their parents. The GREAT teaching team, its administrative staff, and advisory committee, as well as representatives from area colleges, were all there to present details of the program. Only 15 to 18 families appeared; a few were enthusiastic, some were undecided, some dropped out after hearing the presentation. After the meeting with parents, the English teacher canvassed student homes in an attempt to get other students and parents interested, but with little success. Twenty-one students eventually entered the program, but at the time of this study only 14 remained.

The teaching team had agreed among themselves that the interest of the student in the Graphic Arts or Communication Arts should be one of the primary criteria for selection in the future. This was, it seems, an admission that GREAT was not proving as effective as hoped for as a means of helping the average underachiever. Perhaps the selection on the basis of interest was all that they could expect, because as a Palo Alto staff member said:

> I think our biggest problem is simply the resistance of the students and parents to accepting the fact that this is a College Tech program...We don't call it Industrial Arts. Parents..., in my opinion, for the last few years...have been sort of "running scared." They are reluctant to have their students just take the minimum requirements for college, because they rightly know that the competition for college is extreme and they want them to be prepared to meet the competition at the entrance requirements. You've got to not only meet that, but be a little better than the guy next door.

The Teaching Team. An early blow had come to the GREAT team with the loss of the English teacher. Remaining with the program were three teachers, all male, with widely varying age and experience. Graphic Arts was taught by the graduate student who originated GREAT; Commercial Art was taught by the head of the Art Department with many years of experience; Photography was taught by an instructor who was approaching retirement after a teaching career. Daily team meetings were provided by district funding. These meetings were held as needed. As one teacher explained:

> If we are right in the middle of a project, we'll meet at least three times a week. If we're starting a new one, or ending one, we'll meet five times a week. If everything is going smoothly, and we have no problems, which doesn't happen very often, we can cut it down to one or two a week.

No problems of compatibility seemed evident in this team. All three teachers appeared to have a mutual regard for each other's work and functioned well as a team member.

All teachers had received training in a six-week workshop sponsored by the CTE at San Francisco State College. Although the course was authorized as part of the teacher education program and contributed to their salary increments, they had paid their own tuition fees and were not reimbursed for their time. However, they were later paid by the Palo Alto School District for a three-week period in which they worked on curriculum development.

Theirs was an original design since no model of an interdisciplinary Graphic Arts program was thought to be in existence. The GREAT teachers had complete freedom in developing their program, although representatives from the original RP schools were there to offer guidance. In retrospect, however, they agreed that the CTE workshop session should have been more realistically geared to the problem that they were to face in implementing their program. As one instructor recalled:

> As we think back, I'm not so sure now but what they were talking about some of the better part of the Richmond Plan. When we went there this past summer people were talking about 'well, it's so wonderful to see these students do such and such and no problems.'...And so we started our program and we started running into a few problems here and there that we weren't prepared for.

Another said:

> When we came out of the workshop we thought we really had something until we took a better look at our students. Up until that time, we knew them only on the basis of a cumulative folder...You have to come into direct contact with that student before you know what he is like. Here was this beautiful writing in the summer and all of a sudden we're confronted with the students...I think we threw out practically everything written in the summer. It's just one of those things, you're in your white tower, writing for somebody--you're not quite sure who you're writing for.

The Curriculum. Although the team had not followed their carefully constructed curriculum units to any appreciable extent, they had capitalized on the relationship in the units followed throughout the course of the year. Students had worked on such projects as the school magazine, fliers, football programs, and ads from local merchants. One project concerned a brochure for a school event that involved photographs of the participants, an art layout of the brochure, and reproduction in the Graphic Arts Department. A sample of this unit is shown in Table 6.

All teachers, counselors, and administrators agreed that interrelationship of courses was extremely important in the GREAT program. It is also important to emphasize that the interrelationship of courses in the GREAT program departed in some important respects from the interrelationship of courses in the classical Richmond-type programs. On the one hand, in the Richmond-type program, the interrelationship is among Science, Mathematics, and English, with the Technical Lab being the focal point for the projects that are being constructed. The opportunities for interrelationship among these courses has to be brought about in a painstaking way because there is no necessary natural interrelationship. On the other hand, the GREAT program comes close to a natural relation.

Table 6

SAMPLE PALO ALTO HIGH SCHOOL GREAT PROGRAM (Grade 11)*
Interrelated Subject Unit: Half-Tone Reproduction Process for Brochure

TECH LABORATORY (GRAPHIC ARTS) (Hub of Unit)	COMMERCIAL ART	PHOTOGRAPHY
Halftones ● photographs, wash drawings ● paintings, line, Process camera ● use of contact screen ● determining "F" stop ● reverse printing ● test strips-primary and secondary exposure Paper selection ● basis, grain, cost Paper making ● finish, water marks Plate selection ● plate or master? ● how many?	The element of value ● relationship to composition; compositional function ● value in design; value in illustration The element of texture ● relationship to value in composition; compositional function Collage ● compositional function of the collage Development of a halftone problem for reproduction ● brochure-prepare ● types of folds ● printing and layout Exploration and experimentation	Photograph smooth and rough textured surfaces outdoor and with controlled lights indoor. ● strive for good tonal range Take portraits and still life pictures using flash, photo-floods, available lights Make photographic copies of art work; experiment with film and filters Plan to take pictures of school and nearby scenes; emphasize different view-points, dramatic effects, unusual camera angles

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* The students for this unit were organized into groups of four. The small group promotes an interchange of abilities and ideas between students in the designing and printing of the multi-paged brochure.

Photography, Graphic Arts, and Commercial Art permit the correlation of subject matter to a remarkably high degree without any artificiality. A member of the team noted:

> ...when I went to college I missed out on a lot in graphic arts because there was nothing like this. It was strictly printing and whatever the instructor knew about design; that is what we got unless we went off on our own and took an art course in design, which I did...This is not truly graphic arts. I actually learned more about graphic arts in my first year of teaching here than I did when I was in college, because there was equipment here that I could get down and work with. The Art Department is here and since I was a member of the faculty, I didn't have to worry about somebody coming in and throwing me out and I could experiment in design. I could go over and play around in the dark room. I could learn things this way, myself, and so I just felt that this is what we need for the students. To give them the same opportunities, because otherwise they're getting that same thing that I had when I was in college. Throw a straight course at them; that's no experimentation, it's rigid, it's right down the line...

Two field trips had been taken during the year, one to a local major industry, and one to a distant state college having a specialized Graphic Arts program. To the GREAT students and their teachers, the college program and equipment seemed somewhat obsolete; some of the students had been surprised when their college guides could not answer questions about subject matter that had already been covered in the GREAT program.

A 14-member panel made up of industrial representatives and educators had provided guidance throughout the year; speakers had come to the classrooms to describe various occupational segments of the Graphic Arts field.

The GREAT classes were marked by freedom and spontaneity. It was not unusual to hear the students working to the accompaniment of music played on a high school record player. Since the three classes were adjacent, flexible scheduling of course work was sometimes employed; students were relatively free to stay in one classroom for two periods or go to another if their current assignment dictated it. On occasion, this presented problems when students took advantage of this freedom to skip a class.

The Counselor Function. The Palo Alto High principal had stated his belief that the role of the counselor is extremely important. Initially a counselor was selected who was solely responsible for the program. Shortly after the beginning of the program, however, students were reassigned to counselors on an alphabetized basis. The reason for this changeover is not clear and there is no agreement among staff members why it happened. The counselor expected to be made a full partner in the program, but reported that this was never realized. He played a minor role in the program from that point on.

All three teachers agreed that the counselor had tried hard to do a good job. The events that had overtaken the GREAT program apparently prevented effective communication between the counselor and the teaching team.

The Administration. The teaching staff agreed that the support of the administration has been good in many respects. In particular, they agreed that the financial support and the released time during the first year of the program were adequate. As one teacher put it:

> I think financially they have done a very good job. When we request, they respond. They have been very good in this respect. I don't think we could ask for very much more. Materials--they have gotten for us, supplies--they have gotten for us. They paid our tuition. They paid us to go to San Francisco State College for six weeks and at our regular salaries. You couldn't ask for anything...you know, they really went overboard to try to do whatever they could. They gave us scheduling that we wanted. The only thing that I could ask from them, and this would be, say, in counseling meetings or something with parents, is that they would throw in a good word and say we have a new program, Graphic Arts Technology, that would be great for students who are planning the vocational aspect.

Another teacher, although acknowledging the material and financial support, said,

> I'm not sure they know what's going on, even in...[the] department...The only time they know is when I tell them. I invite them down once in a while so they'll take a better look at what we're doing.

Outlook for the Future. The team was looking forward to improving their program in the next year of its operation, including students who had expressed serious interest in the program. They were also making creative plans that would include provision in the high school building program for a new Visual Communications Department. One teacher described this planning:

> Well, one thing that we are hoping will come from this program is that we can show this type of education is beneficial. Not only for the unmotivated student, but

> for the student body in general. We're trying to get this department going, so that we can have a visual communications building so that Commercial Arts, Photography, Graphic Arts, Journalism, and Technical Illustration will all be in one core area where the students can wander through...
>
> And whatever they feel they need at a certain time, we put them in that area and they don't have to go chasing across the campus to see if there is a teacher in that room to let them in to use the drafting equipment or go down to the darkroom to develop some prints...They will be right there.

In the spring semester of 1968, however, an administrative decision brought an end to the GREAT program.

SANTA CRUZ COUNTY

- San Lorenzo Valley High School--PT Program
- San Lorenzo Valley High School--MDSE Program
- Watsonville High School--Project HOPE

Santa Cruz County

General Background

Santa Cruz is one of three central coast counties situated along a 150-mile strip of Pacific coastline. Its northernmost area--approximately 60 miles south of San Francisco--is in the mountainous terrain of the Coast Range; in its southern region are the farmlands of the Pajaro Valley. Although Santa Cruz is California's second smallest county and also has the smallest area of the three coast counties, it shows the highest growth rate (22 percent) for the five-year period 1960-65. In that time, Santa Cruz County's total population climbed from 85,100 to 103,800 and the prediction for 1970 is 130,000--a 25 percent increase.

With this rapid rise in growth rate came changes in occupational patterns, reflecting similar changes in the area's industrial structure and technology. The most dramatic example of this change was the decline of agricultural employment, the area's only industry that had had a loss in average annual employment since 1960. This decline, however, was offset by the expansion of nonagricultural industries in the area. The proportion of the working population engaged in such occupations as technical, medical service, and business has increased since 1960. These were employment areas to which the RP programs adopted in Santa Cruz County were primarily oriented, since in these occupational categories the future outlook was for continued growth.

At the time of this research, Santa Cruz County had one junior college, four high schools, three intermediate schools, and 33 elementary schools. Although there were three high school districts in operation--Santa Cruz City, San Lorenzo Valley Unified, and Pajaro Valley Unified--this study was primarily concerned with the latter two districts.

These programs came into being as an outgrowth of an effort to upgrade and extend vocational education offerings that began in Santa Cruz County in the early 1960s. To Santa Cruz County educators, the implications of the changing economy as previously noted meant the overhaul of an outmoded system of vocational education. As one educational leader put it:

> The goal of meaningful education for all students is no longer simply desirable, but has become an essential ingredient of the social and economic survival of our young people and our community.

A central element of the effort was the attempt to coordinate educational planning with industrial requirements. To this end, cooperation of local industry was sought. As a result of these efforts, the following major changes, among others, have occurred:

1964--Santa Cruz County became one of the first in California to operate a county-wide vocational program under state legislation passed in 1963. Both federal and state grants, as well as local county funds, provided the finances that enabled the county to (1) coordinate and extend vocational programs among its three school districts and with the junior college, (2) develop work experience programs, and (3) offer new vocational counseling services.

1965--A Countywide Vocational Advisory Committee was created, consisting of businessmen, Board of Education members, and educators. Reportedly, high school district superintendents were deliberately left out to avoid diversionary jurisdictional disputes. Work experience coordinators, employed by the county, were appointed to the committee and added to each district staff.

1965--A study, sponsored by the County Board of Education, examined vocational education programs and facilities in Santa Cruz County high schools and made recommendations for improvement.

1966--A manpower survey of central coast counties was prepared by the California Department of Employment in cooperation with the Central Coast Counties Industry-Education Council.

1968--A master plan for the development of vocational programs was published by the County Office of Education. This is a plan for an eventual comprehensive county program whereby training resources of all high schools would be made available to all county students.

It was in this climate of change that the RP programs were introduced. The idea of adopting the RP concept had been considered as early as 1964 when discussions were held with staff of the newly created CTE. In 1965, a member of the County Board of Education who had read about the reported success of the Richmond Plan again suggested the possibility. In the same year, a newly created position of County Director of Vocational Education was filled by a man who had previous experience with Richmond programs; he was prepared to discuss them knowledgeably. An influential role in introducing the Santa Cruz County RP programs was played by a Richmond educator who had also helped to originate the PreTech program at De Anza High School. Since he was then teaching at a Santa Cruz County community college, he was made available to the county staff through a grant from the CTE. When interdisciplinary programs were being planned and implemented, he stimulated interest, and provided essential information and support.

The first curriculum workshop was held in the summer of 1966 at a local junior college for the newly formed interdisciplinary teaching teams, each of which included a counselor. The workshop was conducted by the county in cooperation with the CTE, which provided the staff. The chairman for the workshop was the CTE consultant noted above.

County funds were provided for all teacher and counselor time at the workshops as well as for planning time throughout the first year of the programs' introductions.

From the 1966 planning emerged the design of three interdisciplinary programs, each with a different approach. In one, the basic format of the PreTech program was followed; it was introduced at the San Lorenzo Valley district's only high school in September 1966. A second, introduced in the spring semester of 1967 at Santa Cruz High School, included no occupational orientation; it centered on Humanities. This project was subsequently terminated. The third program was Watsonville High School's Project HOPE (Health Occupations Preparatory Education); it was introduced in the fall of 1967.

In the second Santa Cruz County workshop, held in the summer of 1967 three additional interdisciplinary programs were designed. Teachers from the Santa Cruz district's second high school--Soquel--planned a program in Construction Technology; a second team from Watsonville High planned a Business program. These two will be introduced at their respective schools in the fall of 1968. The third program, MDSE (Merchandising, Distribution, and Sales Education), was developed by a second team from San Lorenzo Valley High School. It started in the fall of 1967.

In the following pages, three of the Santa Cruz County programs are reviewed: PreTech and MDSE at San Lorenzo Valley High School, and HOPE at Watsonville High School.

Although each of the interdisciplinary programs developed by the teaching teams and their counselors had its own unique emphasis, all of them had the common objective of the basic RP philosophy--to provide a more meaningful approach to education for a group of average, but underachieving eleventh and twelfth grade youngsters whose needs were not being met by the traditional system.

San Lorenzo Valley High School--PreTech Program

Origin of the Program

Pre-existing Conditions. San Lorenzo Valley High School (SLVHS) is located in the mountainous, northern part of Santa Cruz County a short distance from the Pacific coastline. It is the only high school in the San Lorenzo Valley Unified School District; the district also had jurisdiction over one intermediate and three elementary schools.

The San Lorenzo Valley is a 25 mile area covered by redwood forests; at its northern end is California's largest state park. A nearby location marks the scene of the start of the first large-scale lumbering operations on the Pacific Coast some 125 years ago; in fact, for many years, lumbering was the area's major industry. One fairly substantial logging and milling operation remains today, but in recent years tourism and recreation have become the Valley's major source of economic growth. There is relatively little industrial development. Many small businesses are owned and operated by Valley residents; others commute to nearby cities for their employment.

Commonly referred to as "The Valley," this area was described by one of its residents as:

> ...A high school centered community....All the community comes to our sporting events, to our music events, to our social affairs....It is a central location where everybody can show up....So they are very interested in what we do here.

During 1966-67, approximately 9600 persons resided in the SLVHS attendance area; its student population was 632. Forty teachers and two counselors made up its certificated staff.

The SLV administrator came to the school in 1964 from a southern California school district where he had introduced work experience programs and other curricula. At SLVHS he found two major program offerings existed: a College Prep curriculum and a Business program. Taking advantage of the available county and federal funding, he set about effecting curriculum change in this school.

Informal discussions were held with his counseling and instructional staff to determine interests in reform. His method of encouraging participation was low key. As he said,

> The most effective way to effect teacher change...is to let teachers think it's their idea....If you don't allow your teachers experimental possibilities without interference, you kill a program immediately....You've got to be wide open to suggestions, wide open to trying new ideas and new things.

Evolution of the Program. It is difficult to isolate the role of the principal in the introduction of the Richmond program from that of others involved in the planning. His role undoubtedly facilitated the changes because (1) funding for the new program was already available through the county, and (2) willing support was available from his district superintendent, as well as from the county. Other innovations have failed, however, given this kind of backing. Once the planning started, the county and district staff did not directly participate in the design or development of the innovative program; implementation was up to the administrator.

Early discussions regarding the feasibility of having an interdisciplinary program at SLVHS were held between the Director of the CTE, the principal, and his counselors. Following these meetings, teacher interest was stimulated by brief references to the program in several early faculty meetings. A formal presentation was made in the spring of 1966 by the CTE consultant noted earlier. Recalling that presentation, a counselor stressed the importance of this man's role:

> This was a key person....He had been associated with a successful program and was enthusiastic about it....So that when he presented it to the teachers he knew what he was talking about.... And he could describe the teaching aspects so that teachers did not feel threatened by it.... To do this, it takes someone who has been directly involved and is also enthusiastic about it.

Many teachers reacted to the presentation with interest. From that group, four were invited by the administrator to participate in the program; all accepted. One was interested because "it would be a year's change of pace; out of the old rut." Two of them, at least, said they had been thinking along interdisciplinary lines for some time. As one remarked:

> I had been hoping for a program like this for years ....I never could see a student having to do the same things twice, unrelated....I even tried here at SLV High to get English and Math teachers to correct assignments in my class....But the usual answer was "it won't work."....I think many teachers have had this idea in the past but they haven't been able to make it operable because it takes a team to do it.

The team was given a free hand in developing their program. The decision was made to adopt a PreTech type of interdisciplinary program. Assistance in development was provided by the CTE consultant. Visits were made to area industries for information useful in relating the course content to occupational requirements. Discussions were held with junior college personnel. Richmond Pre-Tech classrooms were observed and reports on these observations made to the general faculty.

Subsequently, the general faculty was involved in selection of students. They submitted names of those who met the selection criteria developed by the teachers and counselor. Typical RP criteria were used; (1) underachievement as judged by test scores, (2) exposure to one year of algebra, and (3) reading level of at least Grade 10.

There was initial misunderstanding on the part of some of the general faculty members, however. As one teacher described it:

> We had a lot of recommendations; some of them reflecting total misunderstanding as to what the program was for....Some teachers suggested students who were just not able to do regular class work, they were low intelligence students who couldn't possibly have carried a technical program successfully....Some thought it was a program for dropouts. Some academically oriented faculty resisted the idea: They thought all students should be exposed to a degree of university prep material--as much as they can handle--hoping that they can all graduate.

Once enough eligible students (35) had been assembled from the faculty and team suggestions, a group meeting was held to explain the program. An evening meeting with parents followed. There was reported to be some resistance from a few parents who thought their boys should stay in College Prep, but most were positive about PreTech. As the counselor said:

> We were led to believe that you had to work hard to convince the parents of the program's worth as opposed to College Prep....This hasn't been true here.

In the final step of selection, each student met with the counselor for an individual interview. Nineteen of them signed up for the program.

Several program components were now in being; it remained for the curriculum to be formally designed. This was accomplished in a four-week summer workshop sponsored by the County and the CTE, and attended by the four teachers, their counselor, and a backup teacher from the Art Department. The teachers reported that the workshop was very useful. One said:

> It gave us the inside picture that otherwise would only have come through our own mistakes and fumblings. It might have taken three years to gain what we did in one summer workshop....It subsidized our time to sit down and start to work.

Physics, the subject with the body of knowledge the team felt most important for the student to have, was chosen as the core of the program. A tentative curriculum for the year was developed.

> We purposely left it flexible....We thought we should wait and go whichever way the boys wanted to go. We knew we would be unfair to them to impose what we wanted on them....We were hoping that they would get interested in something and build from there.

Operation of the Program

The SRI staff visited the SLV PreTech program shortly after the start of the spring 1967 semester and again at the end of the school year. On both occasions, the program was operating much as originally designed.

Objectives. Basically, program objectives were those of a typical RP program. Teachers spoke often of hoping to "get students excited about learning," and "help them experience success." The counselor said:

> We wanted to see if we would improve grade point average, improve achievement, change the whole attitude and behavior. Those are pretty big things to bite off, but we felt if we even got one or two of them we would justify the program. Long-range objectives? I think we hope these boys are able to fit into any program at the college level, that we have prepared them for a type of thinking process rather than a specific area of knowledge. I don't think any of us want to teach them to be electronic technicians....We like the attitudinal changes to be the major justifications for the program. We were told that many PreTechnical students have gone on to college to become liberal arts majors and this we think is good.

The PreTech Students. Of the 19 boys who entered the program in September 1966, two dropped out of the program in the first week, one of whom subsequently dropped out of school. Most of the remaining 17 students had been in tenth grade College Prep programs.

At the time of the first staff visit, the team was experiencing the typical PreTech problems of the first semester of the junior year. They had been unprepared for the boisterous spirits that emerged when the 17 boys were put together in the experimental climate and relative freedom of the new PreTech environment. As one teacher described them:

> We tried so hard at the beginning of the year to boost them and to get them to participate, they went completely the other way....They are too boisterous and too exuberant and they haven't found the happy level yet.

Another teacher described their classroom behavior in this way:

> This class is by far the noisiest I have ever had.... I have a reputation among the students of being somewhat traditional in running a fairly tight classroom.... It is pretty impossible to run a tight classroom with these youngsters....They simply don't see the importance of sitting down in the seat unless you are lecturing to them....You tell these boys to sit down and they sit down....Then two minutes later they are up again....Unless you can show them why it is important for them to stay seated they won't stay seated.... Sometimes it's hard to give them a reason why.... It makes you examine why you do some of the things you do in teaching and sometimes you realize that you do them just because it is convenient for you, not because it is particularly good....

Status with the student body was an initial problem, as it had been with some of the faculty and a few of the parents. One teacher said:

> We could have done a better job at the beginning in presenting it to the student body because it was a misunderstood program....They thought it was a program for dumb kids, or dropouts.

The group morale that developed, however, had been a significant factor in raising PreTech status. By the end of the year, most of the student body viewed them in a different light than in the early weeks of the program. The PreTech class took certain steps to correct the earlier "dropout" image. Identifying with the Junior Engineering Technical Society (JETS) helped. Reportedly, group discipline prevailed in such matters as physical appearance, behavior on field trips, and reducing trips to the dean's office. The class requested and made presentations to Social Studies classes, put projects on central display, and backed a classmate's successful campaign for student body president. At graduation, one of the PreTech students received the annual award for "Most Improved Student." Speeches and presentations were made to the District Board of Education, and to local businessmen's clubs. Finally, a presentation was made at a national conference of vocational educators held in San Francisco in the spring of 1967.

The Teaching Team. The SLV team consisted of two male and two female teachers, all between the ages of 30 to 50, and all having five to 20 years of experience.

The daily common conference period provided through county funding was reported to be essential for adjusting to the flexible curriculum, planning field trips, and discussing student progress. The team estimated that approximately 50 percent of the time was spent on student problems and 50 percent on program planning. One teacher complained that too much of the time was devoted to student problems rather than to subject matter integration. Another observed that it was most difficult to separate the time spent in this manner because "It is not a subject matter program, it is a student matter program. Your curriculum is the student."

The students, at their own request, also participated in team meetings. The boys appointed a grievance committee that appeared before the team to discuss problems or make suggestions; individual students were also encouraged to meet with the team. The backup teacher said:

> I remember one occasion where there seemed to be several problems; it was one of those stirring meetings where everybody set out their gripes and there were no holds barred....The kids got up and pointed out things like "I don't care for what you are doing in English class," or "You aren't grading us right in Shop"--that sort of thing....One thing that struck me about the program was not only the candor the teachers were able to develop with one another through these frank discussions, but also with the kids.

Three of the four teachers were convinced that the advantages of interdisciplinary teaching were greater than those of traditional. One, although believing in the concept, did not feel personally suited to its demands. He preferred the College Prep program.

All teachers estimated they spent approximately ten hours more per week preparing for their PreTech class than for their other classes.

The Curriculum. The SLV class schedule is shown below (shaded areas indicate PreTech classes):

Period	Monday-Friday
	Junior
1	Mathematics
2	English
3	United States History or Physical Education
	Lunch
4	United States History or Physical Education
5	Physics
6	Technical Laboratory

As originally planned, Physics was the core of the curriculum. Practical application experiments were done in the Physics laboratory; self-interest projects were carried out in the Technical lab. Technical vocabularies and related reading material were introduced in English; technical reports were written. As an outgrowth of a renewed interest in reading, boys requested more formal literature, such as short stories and serious novels. Math, however, was a problem:

> Success in Algebra seems to be one of our weakest points in that we have boys who simply are not able to handle the Mathematics and they have become very discouraged as a result. It has been harder for them than it should have been.

The flexibility built into the curriculum allowed the teachers to adjust course content to the interests, needs, and abilities of the students. The students requested and obtained a change from a planned interrelated unit in Wave Mechanics to one in Heat Machines. Four interrelated units were followed throughout the course of the year's instruction: Measurement, Mechanics, Heat Machines, and Electricity. A sample of the Electricity Unit is shown in Table 7.

Perhaps because of the flexibility of the curriculum, at midpoint in the school year the students asked for and received weekly assignment sheets. These were prepared on the last day of the week during the team meeting period and presented to students on the following Monday. Students also requested grades be posted in each class.

Although the SLV program had no specific occupational goal orientation, it sought to provide basic skill training, combined with basic scientific and communication competence. In the simulated work environment of the Technical laboratory emphasis was placed on developing proper attitudes toward work. The lab instructor said:

Table 7

SAMPLE SAN LORENZO VALLEY HIGH SCHOOL PRETECH PROGRAM (Grade 11)
Interrelated Subject Unit: Electricity

Physics	Math	Tech Laboratory	English
Electron theory	Roots of numbers	Self-interest project as developed	Technical vocabulary
Static electricity	Graphing systems of equations	Splices and joints (wire)	● Spelling
Electric cells		Soldering	● Usage
Ohm's Law		Domestic wiring	Selected technical readings
Circuits		Printed circuits	● Read, discuss
Electric work, power, energy			● Writing
Heating effects of electricity			Speech and oral communications
Theory of magnetism			● Why and how important
Electro magnetic induction			● Types of speeches, speech preparation, speech delivery
Generators			● Oral book reports
Motors			● Dictation and pronunciation
Induction coils and transformers			Modern drama
DC-AC			● Set construction
Inductance - capacitance			● Design
Electric oscillators and waves			● Lighting

> I think being stuck with the same group constantly is good psychological preparation for their future job where they are going to be working with the same people all the time. And in working with industry as I have, I have found in talking to supervisors, this is one of the big problems.

A unique feature of the Physics class was the use of an employee rating sheet; each student was evaluated weekly for his job performance on such dimensions as preparation, equipment care, rapport with other workers, pride in work, time of job completion, concentration, personal appearance, attendance, and direction following. The sum of these ratings determined if the worker were recommended for promotion, retained in his present position, or terminated.

Speakers from industry appeared in the classrooms to discuss various aspects of the employment scene. Technical project reports were written on actual industrial forms provided by industry. Eight field trips were taken to local plants. These plants also provided surplus materials for use in classroom project work. Additionally, industry helped in finding part-time and summer jobs for some of the students. One national firm planned to credit any PreTech graduate with one year's experience on the job.

The local junior college also provided assistance. Staff members came to the PreTech classrooms to describe their offerings; the class went to the junior college to become familiar with these offerings. Teachers reported, "There seems to be a great deal of openness and willingness on the part of the junior college." Under the county's coordinated program, articulation seemed assured.

The SVL program included a significant element not found in other schools: systematic evaluations. These were made by both teachers and students at the end of (1) the first six weeks, (2) the first semester, and (3) the school year. Teachers felt the evaluations had provided useful information and guidance.

The Counseling Function. All outside contacts and arrangements described above were usually handled by the counselor. In addition, he handled all clerical details for the team, contacted parents, and counseled students. The counselor thought that, on occasion, the special attention given the PreTech students had negative results:

> It's like other counseling situations. You grab a student out of the hallway because you think you ought to see every student at least twice a year.... You say, "come on and tell me what your problems are, sit down, you must have some problems".... Well, pretty soon they can think of some and this is what has happened with those Richmond kids.... They think of some problems that they have never had before.

Even so, he felt his counseling load was relatively light with PreTech students because the team also functioned as counselors to their students. His duties kept him from attending team meetings as much as he would have liked and he viewed his role in that regard as one of an anchor man; on occasion he brought objectivity to an otherwise emotionally involved team.

The Administration. The administration continued to be as supportive as it had been initially and the team thought the kind of support provided was close to ideal, i.e., active background support when needed, but without interference. One teacher said:

> When you need a bus to go on a field trip, it is there, when you need released time to take students, it is there. When we have an evening program, the principal, vice principal, or both, and the superintendent often comes and they are a part of it. They support it, but not to the point of interference...

Outlook for the Future. At the year's end, one teacher left the program because, as he said:

> I feel happiest and do my best job with College Prep classes....I can't apply my subject matter as well as you should in this program and I think the next teacher, with an industrial background, can do a better job.

Some changes were being made in the program. The senior year curriculum was developed with Electronics as a focal point. Student selection criteria were changed to include only students with a grade of at least "C" in Algebra. In addition, potentially disruptive students were eliminated and teachers were planning to tighten up on classroom controls. Two girls were planning to enter the program--a first in any of the PreTech programs studied.

Two of the PreTech students, having discovered that their interests did not lie in the technical field, transferred to the new Business program (MDSE). One of them spoke of his PreTech experience to a group of potential MDSE students. A boy in the group asked "What are some of the problems, some of the good points, some of the things we have to go through?" The PreTech student answered:

> Well, we had a few problems at first, we all knew we were guinea pigs and a lot of us had problems in school...The thing worked pretty good with the students the first quarter; we were happy with everything. We had problems in Math, but most of us had never had Physics before and we found it very interesting....It was something different....

> ....The main problem we had at first was in relating the subjects....The students wanted perfection, but we couldn't always get perfection. We didn't know what we were doing and pretty much of it we weren't following....I think the students started having problems and we found right off the bat that we could go to a teacher and tell him exactly how we felt. It was the best thing.... The teachers we had worked twice as hard as they did at the other classes they had and so we learned twice as much....Because it was only 17 students and you could spend more time individually and so we didn't get discouraged like the regular classes.

At the end of the program's second year (1967-68), the PreTech teachers reported the changes they had made in the program had been beneficial. They were somewhat concerned, in fact, that they might have gone too far in eliminating disruptive students, since the 1968 junior class seemed "docile, mild-mannered, and unaggressive." One girl had stayed with the program and reportedly had performed acceptably.

The team was hopeful they had solved the status problem; signups for the next class included some student leaders. They planned to omit the use of the word "underachiever" in connection with the program, feeling this label added to the status problem, as well as having a negative effect on the student's self-image.

At the time, they were concerned about continuity of funding for their team meeting, since the county had originally made only a two-year commitment. The team had taken a strong stand in asking for what they felt was an essential element in operation of the program.

The SRI project staff last saw the SLV PreTech team at the Santa Cruz County summer curriculum workshop held in June 1968. The teachers were optimistic about the coming school year. The future of the PreTech program at SLVHS seems promising.

San Lorenzo Valley High School--MDSE Program

Origin of the Program

Pre-existing Conditions. "The Tech program affected the entire student body and had a decided influence on a new program we are starting." "It has generated new programs in other fields and has increased the awareness of teachers to the relatedness of studies of all types." "Its evident success has stimulated our new Merchandising program." These statements by SLV staff members reflect the feeling of many of the faculty at SLVHS in the spring of 1967, near the end of the PreTech program's first year.

All MDSE (Merchandising, Distribution, and Sales Education) teachers reported that the climate of change generated by introduction of the PreTech program was primarily responsible for the introduction of MDSE. They also agreed that three other factors were significant in the introduction of the new program: (1) the financial support provided by the county, (2) the interest shown by the faculty, and (3) the backing and encouragement of the administration.

Evolution of the Program. The administrator appeared to be the initiator of the idea to focus the program on business. He stimulated the faculty into action by announcing that support would be available from the county for another RP program. From the teachers who expressed interest in participating, four were chosen and then given complete freedom in developing the specifics of their program.

In the summer of 1967, the new MDSE team attended the Santa Cruz County summer curriculum workshop along with the county's other interdisciplinary teams. The program's philosophy and objectives, a rough outline of the year's curriculum, and one sample unit were developed at this workshop.

Although all teachers agreed the workshop provided important training, they felt that too much time was spent in selling the program. As one said:

> We had been so involved with the PreTech team at our school, we felt we were wasting our time listening to guest speakers during the first week of the workshop...We were just eager to get out and start working on the program.

Another teacher thought a major benefit of the workshop was in "the breaking down of conventions that had been important to us for so long," and that a key role in this regard was played by the CTE consultant, who was workshop director.

The program consisted of four subjects: Marketing, Math and Machines, Business Communications, and Commercial Art. Marketing was chosen as the core of the program, with other subjects relating to it in an interdisciplinary block. The team planned to correlate its teaching in order to focus on one problem at a time; the problem would be defined in one class, mathematically analyzed in another, communicated in another, and illustrated graphically in still another. The goal was to reach students who had not been able to see the usefulness of school. These then were the plans of the new MDSE team when school opened in September 1967.

The new team and their counselor worked out the selection procedures. Basically, the same selection criteria used by the PreTech teachers were employed. Students were sought who had shown little interest or success in school, but had average or better scores on mathematics, reading, and intelligence tests. In contrast to most RP programs, MDSE was coeducational with the boy-girl ratio as close to 50-50 as possible. After meeting with prospective students and their parents to explain the program, the class sign-up was completed on a voluntary basis.

Operation of the Program

Objectives. Program objectives were those of a typical RP program, with emphasis on business experiences that would be meaningful and realistic. The program did not seek, however, to provide training for specific occupations. The aim was, rather, to provide a general business background as preparation for further education or employment on high school graduation.

The MDSE Students. Twelve boys and eight girls entered the program. About half of them came from tenth grade College Prep programs; the other half were from commercial programs.

The student's expectations about the program were reflected in responses such as: "I thought I would learn more about the business world as it really is." "I was in the PreTech program last year and found that's not what I wanted." "It would bring meaning to learning things like grammar, showing how, when, where, why we need it." "...Teachers would come down off their pedestal and make friends with us."

At the time of the first SRI visit, the program appeared to be living up to the expectations of a large majority of its students. Teachers were equally optimistic, even though some of their expectations had not been working out as planned.

The selection process was somewhat faulty, however. As one teacher explained:

> We were not quite sure about criteria when we selected these kids and I for one thought they would have some basic skills that we found they didn't have...I think this slowed us down at first because we wanted to be so terribly unconventional. But they didn't know how to be unconventional because they didn't know their grammar, and they didn't know their simple mathematics. So I had this idea of myself involved in this imaginative, new creative program, but there I was teaching grammar.

Classroom atmosphere was relaxed and comfortable; the teachers were at ease with their students. Teachers reported that originally all of the boys sat on one side of the classroom, the girls on the other; by mid-semester, however, they were quite evenly distributed. Participation in a school carnival helped to promote the group identity the teaching team were seeking.

The MDSE class did not go through the adjustment period typical of all male classes; the teachers thought that being together four periods a day had not been significant. Personality clashes were taken care of without interference and group behavior had not been a problem. The teachers viewed the group as cohesive.

The Teaching Team. The MDSE teaching team was made up of three male and one female teacher. Three had six to 20 years of experience; one had two years.

The MDSE teachers said they became interested in participating after observing the PreTech program's operation, and because of their basic belief in the program's philosophy. One said:

> I think that we in the educational field better do something or get out...it's about time that we come to grips with making the classroom start to serve the needs of the kids instead of trying to teach them...We have to create a situation where subject matter can be learned.

The administrator though the most important selection criteria for such a team of teachers was an ability to close the traditional gap between teacher and student:

> It is possible to define this in advance because we have seen them behaving with kids; we can say that the gulf is less here, greater there, or nonexistent in another teacher....Most difficult, however, is predicting in advance how any given teacher

> is going to react in the team situation... This kind of thing doesn't occur in any other way, at any other time, so you have no basis on which to judge how they will behave in the new role...I think you mainly look for a real interest on the part of teachers and their general acceptance of each other...Beyond that, it's almost subject to time and looking at it as it goes, watching them.

MDSE team meetings were held daily; a common conference period was scheduled and funding for released time was provided by the county. None of the teachers was officially designated as the team leader; each played the role on occasion. Disagreements among the teaching team were not a major problem; those that occurred seemed to center on attempts to relate subject matter, or on how to carry out some of the creative learning techniques employed.

Despite their daily planning period, the teachers often met after school to work out additional program details. All four teachers estimated they spent at least eight to ten hours more in preparing for MDSE than for their other classes. The common conference period was thought to be essential: "Without it, the program would not go."

The Curriculum

The MDSE students followed the class schedule outlined below (shaded areas indicate MDSE classes):

Period	Monday-Friday
	Junior
1	United States History or Physical Education
2	Marketing
3	Mathematics and Business Machines
	Lunch
4	Communications
5	Art
6	United States History or Physical Education

The curriculum was continuously revised to meet student needs. These changes were worked out in daily team meetings.

An early project was a school carnival involving planning, purchasing material, sales, and decorating. Shortly after the carnival, the class organized into two corporations: Sales, Inc., and Investments, Inc. Each corporation drew up its articles of incorporation and elected officers. These rival corporations did marketing research, traffic analysis, population studies, and site selection studies for two proposed shopping centers. At the end of the project an oral presentation of a loan application proposal was made to an officer of a local bank and a business instructor at an area community college. The corporations also purchased stock with the proceeds from the carnival and selected a direct-sales franchise to replenish their monies. An outline of the corporation project is shown in Table 8.

The SRI project staff visited the MDSE classrooms shortly before the end of the program's first year. At that time the MDSE team and its students were planning a trip to Disneyland with the proceeds (about $700) earned in connection with a circus project. The entire ticket sales and promotional aspects of the circus were turned over to the MDSE students by the local Businessmen's Association, providing the class with a live project in promotion, advertising, and sales. This was the biggest community project the group worked on.

One teacher said: "We have probably been more involved with the community than any course in the history of this school." Concepts of color and display were studied in connection with window displays placed in local Valley stores. Sales techniques studied in the classroom were applied when light bulbs, purchased with corporation funds, were sold in the community.

At least nine field trips were taken, including visits to shopping centers and the stock exchange; guest speakers (an advertising agent, a newspaper publisher and others) appeared in the classrooms to describe their particular segment of the business world.

An unusual technique applied in the program was the use of telephones in the classroom, complete with speakers that allowed the entire class to hear both ends of a conversation. When buying and selling stock, the class telephoned a local exchange and received an up-to-the minute report on that particular stock. Field trips were arranged by use of the class telephone and the class critiqued each student's call.

Because of the unusual nature of some of the curriculum techniques-class bank accounts, telephones in the classrooms, students leaving campus during school hours to work on community projects--there were legal questions raised. One team member, thwarted at what he felt was "necessary red tape" commented, "I try to move fast sometimes without getting approval for everything...It really starts to squelch you--the bureaucracy of the school structure."

Table 8

SAMPLE SAN LORENZO VALLEY HIGH SCHOOL MDSE PROGRAM (Grade 11)
Interrelated Subject Unit: Store Ownership and Organization

Mdse Marketing	Mdse Math and Machines	Mdse Commercial Art	Mdse Communications
Store ownership	Issuance of stock	Advertising	Vocabulary
● Forms of ownership	● Explanation of stock	● Theory	Writing of a prospectus
● Sole proprietorship	● Computing dividends	● Principles	● Mathematical
● Partnership	● Stock purchases	● Types	● Business trends
● Corporation	● Machine use	● Production, techniques, and skills	Form a corporation
● Formation	● Computing brokerage fees	Design and produce stock certificates	● Election of officers
● Management	● Computing taxes on sales of stock	Methods of reproduction	● Issuance of stock
● Types of stock	● Computing rate of return	● Off-set	
● Dissolution	Profit sharing	● Ditto	
Types of store organization	Bankruptcy	● Line cut	
● Small store organization			
● Large store organization			
● Merchandising			
● Sales promotion			
● Store operation			
● Maintenance, customer service, supplies			
Finance and control			
● Credit and collection			
● Bookkeeping and accounting			
Personnel			

Despite the imaginative procedures employed, the teaching team had its share of difficulty and frustration in employing the techniques of interdisciplinary teaching. All of the teachers expressed concern about relating their subject matter. One said, "I think that we have sometimes tried to overrelate--to the point where it's hurt us...We go around feeling guilty because we don't feel we have related enough." Another teacher declared "...This team I'm on is a soul-searching team--always asking are we doing the best thing. I think that it becomes awfully easy to worry too much...." Each teacher, however, still believed in the concept as an essential program ingredient. They feared that letting go of the concept would result in a tendency to revert to traditional methods. Two other innovations were reported to be perhaps even more important than the degree of correlated subject matter: (1) interest-provoking projects, and (2) breaking down the walls of the contained classroom and using the community as the classroom. One teacher said he believed "relating to the outside world is every bit as important as relating to each other." All four said the solution was to relate wherever possible. One teacher said,

> It will take another year to know. Maybe a Business team can't interrelate as closely as a Tech team can... We're not sure of this...We have nothing to base it on... We're still experimental, still developing.

The administrators at SLVHS felt the correlation of subject matter was secondary to the primary facet of the program--the relationship between the students and their teachers.

> I think it's definitely more important that four teachers are relating to a group of kids... They do relate their course of study but not all the time and not as much as it could be if four expert curriculum people were working on the program but who, perhaps, could not relate to students as they do.

The Counselor. In addition to other functions, the counselor acted as a liaison agent between the team and the administration when the need arose. Having been actively involved with the team in curriculum writing at the summer workshop, she was familiar with the goals and philosophies of the program.

The Administration. The SLV administrator during the year of the MDSE study (1967-68) was the school's vice principal in the previous year. The principal he replaced had gone on to become the SLV District Superintendent of Schools. Both administrators were viewed by the MDSE team as being highly supportive of their program. All stated that their principal supported them actively, scheduling the additional preparation period, showing interest in their ideas and activities, and arranging field trips.

The administrator viewed his role, as did his predecessor as one of providing background help when needed, but without interference.

Outlook for the Future. At the end of the first year the team was revising the curriculum and writing the senior year program, which was to consist of MDSE Sociology, MDSE Economics, MDSE Accounting, and MDSE Communications. Improvements being planned were more field trips, more interactions with the Community Advisory Committee, and more parental involvement. The administrator said:

> We, as a school, are just beginning this year to involve the community the way we would like to involve them...We are now seriously considering formation of parent groups to devise ways and means of working together for mutual benefit... Really, this has been an area of weakness for years--we really haven't known what John Doe thinks and I believe we want to know and we need to know.

The program's future seems assured of continuity for the coming year at least. One teacher at this school perhaps expressed the feeling of many when he said, "Even if this thing fails--if all this fails--it was worth it as far as opening the eyes of teachers to new ideas, new courses, and new methods of teaching."

Despite the imaginative procedures employed, the teaching team had its share of difficulty and frustration in employing the techniques of interdisciplinary teaching. All of the teachers expressed concern about relating their subject matter. One said, "I think that we have sometimes tried to overrelate--to the point where it's hurt us...We go around feeling guilty because we don't feel we have related enough." Another teacher declared "...This team I'm on is a soul-searching team--always asking are we doing the best thing. I think that it becomes awfully easy to worry too much...." Each teacher, however, still believed in the concept as an essential program ingredient. They feared that letting go of the concept would result in a tendency to revert to traditional methods. Two other innovations were reported to be perhaps even more important than the degree of correlated subject matter: (1) interest-provoking projects, and (2) breaking down the walls of the contained classroom and using the community as the classroom. One teacher said he believed "relating to the outside world is every bit as important as relating to each other." All four said the solution was to relate wherever possible. One teacher said,

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Watsonville High School

Origin of the Program

Pre-existing Conditions. Watsonville, located in southern Santa Cruz County, has traditionally been an agricultural community with fruit and vegetable processing as its major industry. Today, however, the area is diversifying its economic base with a growing concentration of light industrial plants.

At the time of this study (late 1967), about 33,000 people resided in the attendance area of the Pajaro Valley Unified School District, which administered 17 elementary schools and one high school--Watsonville. Until completion of the district's second high school (now under construction), Watsonville High, with its total student body enrollment of 3,200, is expected to continue to be as overcrowded as at the time of this research.

The advent of the Santa Cruz County effort to upgrade and coordinate district vocational offerings was the start of curriculum revision at Watsonville. In 1964, a cooperative work experience program was developed in ornamental horticulture for boys thought to be potential dropouts. The following year, a second cooperative work experience program was introduced to train girls as homemaker assistants for future employment in motels, nursing homes, and private homes. In 1966 Watsonville's first RP program, Project HOPE (Health Occupations Preparatory Education), was introduced.

Evolution of the Program. Interest in the possibility of a Watsonville program arose when a counselor attended a 1964 county meeting wherein the Director of the CTE outlined RP philosophies and operations. In 1965, a second county meeting with CTE staff renewed the interest of this counselor and he subsequently recommended that an interdisciplinary program be adopted at Watsonville High School. District administrative approval was given the counselor to proceed with plans for the program.

Watsonville High's administrators were supportive. The instructional vice principal already had knowledge of the Richmond Plan, having come to Watsonville High from a counseling post at De Anza High School, where he observed the operation of the initial PreTech program. The Watsonville principal also was familiar with programs of this nature. In former years, while serving as head of the California State Vice Principal's Committee, he was involved in many discussions of ongoing curriculum revisions in the state, including the Richmond programs. His work with this group, he said, led to interest in changing curricula to meet student needs more effectively. His philosophy of innovation from an administrative perspective was:

> I believe that the administration has to make it possible first for these things to go on, then exert leadership in getting people to think about it. Often in educational innovation there is a fear of lowering standards...Some people are just not realizing that standards are changing constantly...Until we have experimented and tried something different how are we going to know what the proper standards are?

This administrator felt, as did his SLV colleague, that teacher involvement in planning is critical for the success of an innovation. Certainly his teachers, in that early period at least, were given support, in both entering and planning the program.

At Watsonville High, as elsewhere, the role of the consultant was one of major significance in stimulating teacher interest and enthusiasm. Once the decision to have the program was made, the CTE consultant made a presentation to the Watsonville faculty. Subsequently, a questionnaire was circulated to the faculty to ascertain their interest in having a new program of this nature, and from those who responded, a tentative team was picked.

The selection of the teaching team was made by the administrators and the counselor with the assistance of the CTE consultant. As one explained:

> We had more volunteers than we could use so we tried to select subjectively and objectively those we felt were (1) most sympathetic to the problems we hoped the program would answer, (2) those who could devote the necessary time, and (3) perhaps most importantly, those who could work together as a team.

All of the team members attended the 1966 Santa Cruz County workshop, along with the teams from San Lorenzo Valley and Santa Cruz high schools. One teacher recalled:

> ...It's hard to say how the idea of a Paramedical curriculum came about...It finally just emerged and that's what the director had said would happen. Somebody got the idea--well, we don't do anything for girls, especially average, nonachieving girls... And then, I think the newspaper headlines announcing that Medicare had gone into effect probably influenced our decision.

Shortly before, a manpower survey of the tri-county area reported a recent decline in agricultural employment and pointed out expected increases in demands for health personnel. Local junior college training programs for such occupations as vocational nurse, dental assistant, x-ray technician were already in operation and articulation with these would be assured. These factors, taken together, resulted in the program's final design. Five subjects were included: English, Nutrition, Typing, Chemistry, and Mathematics. A departure from the typical RP format was that one teacher was assigned to teach both Science and Math.

Following the workshop, the team met for detailed program planning on a daily basis throughout the school year 1966-67. Meetings funded by the county, were held after school hours. The counselor met regularly with the team; in fact, he was official Project Coordinator. No teacher functioned as a strong team chairman.

Throughout the year, the team met often with its community advisory committee consisting of the following: a local hospital administrator, registered nurse, vocational nurse, medical secretary, dental assistant, medical receptionist, and a representative from local junior college health programs. The committee's expressed purpose was to: (1) correlate and communicate community needs, (2) offer guidance in planning, and (3) provide "resource" people.

Working from the suggestions of the advisory committee, the HOPE planners aimed for a program relevant to available jobs. A significant amount of time was given to developing their curriculum and interrelating their subject matter. This proved to be a time-consuming process, for the HOPE teachers had no prototype to follow, no classes in other systems to visit, and no teacher guides to aid in development. This was believed to be the first program of its kind. Eventually, four units such as those shown in Table 9 were developed.

Student selection consumed the most time during that year of planning. The counselor and teachers together reviewed detailed information on over 200 students. The faculty had cooperated in the initial selection process, returning names of students they thought appropriate for the new program. One teacher said:

> We came back night after night and went over every detail...We looked for homogeneity, especially in math, figuring science would follow. The hardest thing to decide was whether to take a child or not... Was she really an underachiever?...We spent so much time debating...Maybe we overselected...

Student interest patterns compatible with medical occupations were of the utmost importance as a selection criterion. The Strong Vocational Interest Test was employed for this purpose. Beyond this, the candidates were to be average or above-average girls not achieving up to their abilities. The selection was easier said than done, however; anecdotal information plus intuition played a large and necessary part in the final decisions.

Table 9

SAMPLE WATSONVILLE HIGH SCHOOL HOPE PROGRAM (Grade 11)
Interrelated Subject Unit: Measurement

Chemistry	Math	Home Economics	Typing	English
Use of the tool of measurement...weight, volume, linear, temperature, etc. Laboratory work ● Determination of fat in ground beef ● Determination of water in ground beef ● Protein and ash in same Optional lab work ● Protein and carbohydrate content of flour ● Fat and solid content of milk	Continuation of development of metric system and scientific notation Use of slide rule Formulas derived from measurement Dimension analysis Computation with a purpose	Preparation and use of ground beef; grades of ground beef Measurement of liquids and solids in recipes Unit conversions in recipes Meal planning, nutrition	Measurement of individual handwriting speed Measurement on typewriter Horizontal and vertical management Beginning of skill development Building sustained typing power	Related speech Format for oral and written reports Written reports ● Mechanics of English The sentence: ● The verb, subject-verb agreement ● The pronoun, pronoun agreement ● The modifier ● Coordination and subordination

By the end of the year, 30 girls voluntarily signed up for the HOPE program; five alternates were chosen. All students and their parents attended an evening meeting at which the goals and philosophies of the program were explained; each parent's permission was obtained. Care was taken to emphasize the positive aspects of student selection; it was described as a program built around their strengths rather than weaknesses.

The SRI project staff first visited Watsonville High School in late summer of 1967. HOPE teachers and their counselor were only recently returned from a two-week summer workshop spent at a nearby military hospital in on-the-job training supervised by medical technicians. The team was looking forward to the approaching opening of school and their first HOPE class--the culmination of a year of intensive planning.

Operation of the Program

The SRI project staff returned to the school early in the first semester and observed the HOPE program in operation. Both teachers and students seemed hopeful about the innovation.

Objectives. The objectives were substantially similar to the RP doctrine, with primary emphasis on conservation aspects--renewing interest in and motivation for learning on the part of average underachieving students. However, HOPE had a life of its own. The program had a strong occupational focus--its graduates were guided into a fairly narrow range of occupations. Entry level jobs after high school included nurses'aid, medical clerk, and the like. College-trained jobs included nurse, dental assistant, lab technician, and related occupations. As previously mentioned, the selection procedures strongly prescribed that candidates have a high degree of interest in medical occupations.

The HOPE Students. Thirty girls had entered the program; about half had been in tenth grade College Prep programs, the remainder in commercial or general programs. Most of their reasons for changing were related to the vocational aspects:

> I wanted to go into the medical field and I thought HOPE might help me achieve my goal.

Most had high expectations about how the new program would differ from their tenth grade program:

> I knew it would be an exciting new experience with all the classes relating to each other.

When the project team made its third visit at the end of the school year, however, they found Project HOPE suffering from the problems encountered during the shakedown period of the first year. Contrary to the high expectations that marked the program's start, some things had gone wrong. Despite their carefully worked out criteria, teachers felt student selections were faulty. There was insufficient homogeneity in math ability among the students; some had not been true underachievers, whereas others had lower abilities than originally anticipated.

From the teacher perspective of classroom order, the effects of the group being together for several periods each day appeared to be mainly positive. Some friction had developed because of the formation of cliques, but there was no boisterousness or disorder, as with the all-male classes. One teacher, however, spoke of their need to communicate continually with each other:

> I don't mind kids helping each other, but sometimes when they are supposed to be doing individual work, one pops up and just asks a question of a girl three rows back... in 14 years of teaching, I have not had that happen in class.

The English teacher expressed a first-time experience with the kind of group dynamics exhibited in the class:

> I've taught for 17 years and this is the first time I've taught a class like this...And the first time in my life that I ever took a tranquilizer. I'm a traditionalist right down the line; I have strict discipline in every class but this one. They've taken a lot of the starch out of me, a lot of the stuffiness...they talk about themselves, I talk about myself...we have problems together, we try to solve them together. We've had a lot of disappointments, but I still think that what we have done for some of these girls is a lot more than I've ever been able to do in 17 years for any other group, taken as a group...because I developed a rapport with these kids that I never have been able to develop with a class before.

The Teaching Team. The HOPE team consisted of four teachers (three male and one female), all between the ages of 41 and 60. All had 10 to 20 years of teaching experience. Most of the reasons they gave for wanting to teach in the program centered on the evidence of need that they felt existed for the underachieving student.

Original teacher selection resulted in a problem. The decision to have one teacher for both Science and Math produced what the teacher himself labeled "overexposure." The major problem, however, centered on the lack of a common conference period for team meetings; the administration was unable to schedule one. The team tried to meet twice a week after school hours, late in the day; for a time they even met before school at 7:30 a.m., but the meetings dwindled in frequency.

The problems the team faced resulted in feelings of ineffectiveness. As one teacher explained:

> What makes all of us a little sick, our hearts a little low, is that we thought we could get more results than we had.

Another said:

> I think part of our problem has been that we expected more than was humanly possible and so our failures have caused us to be pretty depressed in some areas... I wondered where I had failed and why I had failed and what in me was keeping me from being able to reach every student.

Another teacher, however, thought that there was too much concentration on their failures:

> Too often our discussions center around the disappointments...this student isn't making it, or what can we do for that student? I think we spent too much time talking about it, and too little time trying to correlate our work so that we could get down to business and have some relationship.

The Curriculum. The HOPE students followed the schedule outlined below (shaded areas indicate HOPE program classes):

Period	Monday	Tuesday	Wednesday	Thursday	Friday
1	← U.S. History →				
2	← Physical Education →				
3	Nutrition	Paramedical	Home Econ.	Science	Math
4					Lunch
5	← Lunch →				English
6	Math	English	Math	Math	
7	Typing	Typing	English	Typing	Typing

In practice, the units worked out in the planning periods proved partly inapplicable to the HOPE students. As one teacher explained:

> It's almost impossible to realize the lack of science training these people have. We started off with what I thought was a relatively simple concept--just density. We were dealing with our measurement unit. But when we got into what we had written, we found these girls not only had no pretraining, they were absolutely inept in any science area. As a result, all of the units we had planned were scrapped...We had to go back to basics...

The only interdisciplinary project undertaken was an English-typingwriting assignment. However, there was subject articulation on an informal basis. One teacher said:

> I never really knew what was going on in the other classes at all and so I have gone on my own all year.

The English class evolved as the hub of Project HOPE. Here, the emphasis was on communications. All teachers, however, shared a belief in the value and importance of interrelated subject matter. They also wished they had been able to effect more meaningful relationships of their courses.

Field trips were the highlight of the year's curriculum. Six trips were taken to local hospitals, a school of nursing, and the Biological Science Division of a private research institute. The Community Advisory Committee provided classroom speakers on occasion. Both the team and the girls expected the experimental nature of HOPE would attract many visitors; regrettably, few had appeared.

Teachers thought the curriculum had some disadvantages for the girls. The major one was the feeling some students had of being trapped in the program. Because of the program's unique scheduling, there was no way to channel them into other programs after mid-year. One teacher saw the major disadvantage to the students in the fact that "we have not been able to do what we set out to do; we have not had time to meet as a team to plan properly."

The counselor was concerned about the amount of technical competence they had gained in the program's first year. He said:

> Behaviorally, we have seen tremendous improvement in some of the girls; instead of turning inward psychologically, they are looking out...They have grown mostly in the realm of communications and self-concept...But in the technical science-math area, I feel they are way out of it...And the technical area should have been the most important in our program, because of the occupational area we're preparing these young ladies for...We do have a commitment to these students, to their parents, and to the Advisory Committee that they will be ready

> for these post-high school programs; therefore, I feel this must be our first level of responsibility.

The Counseling Function. The counselor, with all his other responsibilities, continued to give all the time he could to the team. He said, in fact, that his role had been perhaps oversupportive, and that the teachers relied on him too much for direction of the program:

> I've been involved too much...I would like to have seen the teachers take more of the direction themselves... Because of my multiplicity of duties, I think I've let them down.

The teachers did not agree. The following view reflects the feeling of the entire teaching team:

> We have a terrific counselor...His role is more important than any individual teacher...But he's too busy--working 20 hours out of 24...I think if you're going to get a counselor on a program of this sort, he ought to be a full-time counselor...All the girls have such appreciation for him and for what he is doing...And they need him...The times he came and sat in my classroom were important to those girls.

The Administration. The administrator felt that the press of duties in his large and overcrowded school kept him from the classrooms:

> From time to time maybe they feel we are not giving them support because we don't get out there often enough...I think that visitation should be a very important aspect of this thing and I feel we have fallen down here.

A seeming lack of administrative interest was felt by the team. All believed there was verbal support for the program, but as one teacher expressed it:

> They think what we're doing is a great thing, but they really don't know what we're doing. The program has suffered here more than any other way...We asked for support, even demanded once that they come to a team meeting...But they always said "too busy."...Wouldn't have taken much of their time--just a little class observation consistently and some discussion with us now and then.

Outlook for the Future. Despite their feelings of failure, three of the four teachers were planning to stay with the program. These three went on to a summer curriculum workshop where all Santa Cruz County interdisciplinary teams came together for two weeks of evaluation and program planning.

The SRI research staff visited the workshop on its last day. The HOPE team seemed encouraged by some evidence of support by the District and they had high expectations for the coming year, more realistic expectations, perhaps, since they had survived the difficulties of the first year. They were looking forward to improving their program in the following ways:

- More related and active lesson planning
- More meaningful field trips
- More participation of the Community Advisory Committee
- Active participation by parents
- Providing opportunities for work experience
- Observation of medical and dental courses at junior college
- More careful selection for next class

The HOPE program had a most auspicious start, since the teaching team had the great advantage of a school year (one period a day) in which to develop the program and to select the students. The in-service training was equal to or better than most other programs enjoyed. The first year had produced a number of problems, however, and undoubtedly there were many times when everyone was ready to call it off. The fact that they persisted and believed prospects for the coming year would be better was a tribute to the goodwill and toughness of the teachers involved.

Late in the school year, a staff member, in a moment of self-doubt, told the researchers:

> Is the interdisciplinary concept of teaching adding that much to what these girls are getting? Can we really justify the cost of the program? Could the English teacher have motivated these girls in an isolated program, as he did in HOPE, without this whole experimental thing?

The course of the next school year will answer most of these questions.

Summary of the Profiles

Chart 1, organized along the same lines as the individual profiles, presents highly condensed summaries of the more important material contained in the 10 profiles. Before proceeding to a discussion and interpretation of the large amount of material in the profiles, there will be a detailed analysis of the more quantitative data in a framework that permits comparison of schools (Section III following). The primary focus of this analysis will be on the effects of the RP programs. Section IV will then assemble the data derived from the profiles and the comparative analysis in an attempt to arrive at statements useful to schools interested in introducing the RP.

Chart 1

SUMMARIES OF P

Significant Factors in the Origin and O

HARRY ELLS Pre-Technical	DE ANZA Pre-Technical	RICHMOND Pre-Technical	EL CERRITO Pre-Technical	PACIFIC Pre-Technical
School Population: 1,812	School Population: 2,120	School Population: 2,488	School Population: 1,708	School Population: 1,150
Community: Urban-industrial; low SES	Community: Suburban; medium SES	Community: Urban-industrial; low SES	Community: Suburban; high SES	Community: Urban-industrial; medium SES
Origin: 1960-62	Origin: 1960-62	Origin: 1964	Origin: 1964	Origin: 1963
Innovation conceptualized here; roots in counselor dissatisfaction with existing curricula. Developed by interaction with Ells teachers and educators in other systems. Initial rejection by school district and institutions of higher learning. Foundation support for development; 2-year planning period produced formal design. Emphasis on engineering technician training. Passive administrative support. Introduction low key; few demands on *system, minimum demands* on teacher time.	Innovation had roots in early attempts of industrial arts staff to improve their curriculum. Program developed by interaction with extremely supportive De Anza principal and educators in other systems. Initial rejection by school district and institutions of higher learning. Foundation support for development; 2-year planning period produced formal design. Students selected by teachers only. Emphasis on engineering *technician training.* Introduced with attention; high administrative involvement.	Early attempt by principal to interest faculty failed; district directive installed program. Resistance: need questioned; felt adequate vocational offerings existed; preferred waiting until program's worth proved. Teachers selected by principal; little enthusiasm. Unfamiliar with program goals and philosophy. Brief visits to other systems, no time for planning or training. Passive administrative support; treated as any other existing program without special attention or teacher rewards.	High College Prep enrollment; academic preparation stressed. Early interest in program by some staff; district directive installed program before ideas developed. Resistance: centered on question of program adaptability to highly academic milieu. Some staff felt needed. Three volunteer teachers, no time for planning or training. Students selected by counselors only, unfamiliar with criteria and philosophy. Passive administrative support; no attempt to counteract status problem, no special attention.	Recently opened school, no established tradition; vocationally oriented administration committed to curriculum reform; stimulated dissatisfaction and desire for change. PTA committee, teachers, administrators investigated Richmond Plan; made visits to ongoing programs. Speakers stimulated faculty interest. Volunteer teachers attended Ford Foundation workshop, designed curriculum. High expectations; philosophy of no student failure. Emphasis on engineering technician training. Highly supportive administrator.
Early problems: interrelating subject matter.	Early problems: some general staff resentment.	Early problems: student selection, group behavior, interrelating subject matter, lack of scheduled team meeting time.	Early problems: status; student selection—program rejected by students and parents as second rate; interrelating subject matter; lack of scheduled team meeting time; no concensus on philosophy.	Early problems: students unprepared for planned curriculum; difficulties in adhering to philosophy of no student failure, interrelating subject matter.
Operation: 1966-67 Objective changed to provide basic education, emphasis on communication. Student selection continued as joint teacher-counselor effort, no chronic behavior problems admitted. Classes marked by camaraderie among students; high student-teacher rapport. Experienced, highly compatible teachers, met weekly in scheduled common conference period. Team selected teacher replacements. Interrelationship important, but not 100% correlation. Students given voice in program planning. Administrative support ideal.	Operation: 1966-67 Objective changed to basic education, emphasis on Tech Lab project work. Student selection mainly effected by teachers, some counselor assistance; no chronic behavior problems admitted. Camaraderie among students; high student-teacher rapport. Experienced, highly compatible teachers, met average every 10 days, no common period scheduled. Stress on importance of interrelated subject matter. Passive administration support.	Operation: 1966-67 Objective changed to provide basic education, emphasis on Math and Science. Student selection continued by counselor only. Some unity among seniors; little esprit among juniors. Teacher belief in program's worth but little team cohesion. No common conference or lunch hour scheduled; team met only in brief, informal conversations. Minimal subject matter correlation; slowed-down pace of instruction stressed. Passive administrative support.	Operation: 1966-67 Objective changed to basic education. Student selection continued by counselor only. Classes marked by low esprit; students felt deprived; program had not lived up to expectations. Teaching team divided on philosophy and belief in program worth. No team meetings; little informal communication; no subject matter correlation. Passive administrative support.	Operation: 1966-67 Objective changed to providing industrial technician preparation. Student selection continued to be mainly effected by counselor. Team divided on philosophies of student vs. teacher failure, group discipline, importance of interrelationship, course content, need for team meetings. High degree of administrative support.
Major problems: adjusting to move to new school.	Major problems: lack of scheduled team meeting time; adjusting to difference in administrative approach.	Major problems: student selection—criteria and objectives still unclarified; group behavior; interrelating subject matter; lack of scheduled team meeting time.	Result: Program terminated in 1967.	Major problems: lack of scheduled team meeting time; division of team philosophy.

rt 1

OF PROFILES

nd Operation of the Ten RP Programs

CUBBERLEY Pre-Technical	PALO ALTO GREAT	SAN LORENZO VALLEY Pre-Technical	SAN LORENZO VALLEY MDSE	WATSONVILLE HOPE
School Population: 1,200	School Population: 1,450	School Population: 632	School Population: 632	School Population: 3,200
Community: Suburban; medium SES	Community: Suburban; high SES	Community: Rural-resort; medium SES	Community: Rural-resort; medium SES	Community: Rural-agricultural; low SES
Origin: 1963	Origin and Operation: 1966-67	Origin and Operation: 1966-67	Origin and Operation: 1967-68	Origin and Operation: 1967-68
Educational climate of experimentation. High College Prep enrollment, but history of concern for academic underachievers. Early teacher committee studied needs of such students, planned team instruction. Volunteer teachers adopted Richmond Plan after interaction with innovators. One-year planning time produced TechPrep program; assistance from industry and junior college advisory group. Emphasis on engineering technician training. Highly supportive administrator.	High College Prep enrollment; academic preparation stressed; attempts made to serve needs of less capable students. Some early staff familiarity with Richmond programs. Graduate student responsible for development of GREAT. Industrial Advisory Committee assisted in planning. Team meetings scheduled as needed. Little teacher-counselor cohesion; students selected by counselor only. Administrator supportive.	Outgrowth of county drive to upgrade vocational education offerings. Volunteer teachers; visits to other programs, industry. Counselor attended workshop. Students selected by counselor and teachers. Initial status problem, class raised image. Strong team leadership. Daily team meetings; county funding. Students given large voice in planning; systematic teacher-student program evaluation. Innovative administrator.	Climate of change created by Pre-Tech program led to introduction. Volunteer teachers. Counselor attended workshop with team. Students selected by counselor and teachers. Team meetings scheduled daily; county funding. Creative classroom techniques; projects involving community. Innovative administrator.	Outgrowth of county drive to improve vocational education offerings; counselor originated, attended workshops with volunteer team. Students selected by counselor and teachers. One-year planning period. No scheduled team meetings, no interrelated projects. Team felt administrative support lacking.
Early problems: lack of concensus on program goals and philosophies; uniformity in team meeting discussions; interrelating subject matter.				
Operation: 1966-67 Objective changed to providing success-oriented basic education. Student selection continued by teachers and counselors; senior students also participated. No regularly scheduled team meeting time; held as needed. Industry and junior college involvement with program. Administrator supportive.				
Major problems: lack of scheduled team meeting time.	Major problems: status; student selection.	Major problems: initial status; group behavior.	Major problems: interrelating subject matter.	Major problems: interrelating subject matter; lack of scheduled team meetings; student selection.
	Result: Program terminated in 1968.			

III COMPARATIVE ANALYSIS

Introduction

The preceding section has emphasized the unique aspects of the Richmond Plan within schools. Considerable attention was paid to processes of change and to the critical factors associated with that change. Above all, the attempt was made to recount the full story of change as it happened within a given school, from the earliest beginnings to the current period.

From these analyses, it is apparent that each school has adapted the RP according to its own needs and resources. In a sense, 10 different innovations were being evaluated. But in another sense, it is clear that all 10 programs struggled with the same basic problem--the unmet needs of the average student. All schools had the same general objectives of helping him by renewing his interest in learning and in school. And all schools employed, or attempted to employ, more or less similar methods in realizing these objectives.

Given these similarities among schools, and in light of the large variation among the 10 programs, it becomes useful to view the data in a comparative perspective, so that differences and similarities can be identified and, hopefully, explained. This section, devoted to comparative analysis, is organized into three major parts, as indicated in the following outline:

A. Effects of the RP programs

    1. Reactions of RP students to their programs

        a. Current students
        b. Alumni and their parents

    2. Comparison of RP and CG students

        a. Changes in program goals
        b. Personal changes
        c. Students' feeling about having a say in their education
        d. Educational aspirations of students
        e. Changes in grade point average and attendance

    3. RP teachers' comments on student benefits

    4. Observations of Research Staff

5. Effects on other programs
    a. General faculty reactions
    b. Actual introduction of other RP-type programs

B. Awareness of and attitudes toward RP programs
    1. Reactions of the general student body
    2. Reactions of the non-RP teachers

C. Costs associated with the RP programs.

Effects of the RP Program

The information developed concerning the effectiveness of the RP programs is divided into two broad categories: (1) reactions of RP students, both current and alumni (e.g., satisfaction with the program) and (2) comparison of RP and CG students (e.g., differential personal changes due to programs).

Reactions of RP Students--Current Students

Four indicators concerning the personal views of the RP students about their program will be considered first. The indicators and the questionnaire items used to derive them are:

- Personal benefits ("Has the ____ program done anything for you personally?" The percent checking "yes" is tabulated)
- Satisfactions ("Thinking back again to all of your experiences in the ____ program, how do you feel about it?" The percent checking "very" or "fairly" satisfied is tabulated)
- Would repeat program ("If you had it to do over again, would you take the ____ program?" The percent checking "yes" is tabulated)
- Good things in program ("Are there any really good things in your ____ program compared to the program you were in as a sophomore?" The percent checking "yes" is tabulated)

These questions have been combined into an index as shown in Table 10. (The index is the mean percent on all four questions.) (See Appendix B, Table B-2, for detailed tabulations for these four questions.)

Two features of these data deserve special attention. First, the variability across schools is very large, more so than the SRI investigators would have expected from personal and intuitive judgments of the effectiveness of the programs in the various schools. But, no matter how striking the variability within a school, there is remarkable consistency in the rankings. Certain clusters of schools are readily identifiable as falling in the high, middle, and low ranges in all four variables.

Table 10

PERSONAL VIEWS OF RP STUDENTS ABOUT THEIR PROGRAMS, BY LEVEL OF ACCEPTANCE

	Juniors		Seniors	
	School	Percent	School	Percent
High*	De Anza	83%	Harry Ells	91%
	San Lorenzo PreTech	83	Richmond	90
	Harry Ells	80	De Anza	83
	Palo Alto	80		
Medium*	Watsonville	73	Pacific	75
	San Lorenzo MDSE	72	Cubberley	71
	Cubberley	70		
	Pacific	64		
Low*	El Cerrito	36	El Cerrito	21
	Richmond	35		

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* Schools with 80 percent or above are "high," 50-79 percent are "medium," and 49 percent or below are "low."

For schools with both junior and senior classes (right hand column), there is complete consistency among those in the high, medium, and low categories with the exception of Richmond, where the junior class ranks lowest and senior class very near the top. With this exception, the effectiveness of the several schools as measured by these four variables is fairly apparent. El Cerrito is clearly and consistently at the lower end of the scale in all measures. At the other extreme, De Anza, Elis, Palo Alto, and San Lorenzo Valley PreTech are consistently at the high end of the scale. However, for the schools in the middle range the case is not so clear. Since the number of cases is so small, a few students added to either the positive or negative side could switch the cluster into which a school would fall. Viewed differently, the schools in the middle range cluster have only 25 to 35 percent of their students who register negative reactions on the four variables.

Two of the questions in the personal views index had open-end followups, namely, "Has the program done anything for you personally?" and "Are there any really good things in your program...?" The personal benefits were divided into present and future. For the present benefits, the most frequently mentioned aspect of the RP programs was increased academic ability (about 20 percent). Around 10 percent of the students mentioned each of the following factors: (1) improved technical skills,

(2) improved interest in school, and (3) improved social relations or social skills. Future benefits clustered around preparation for a vocation and preparation for additional schooling, each around 20 percent. Vague references to preparation for the future were mentioned by about 15 percent.

Those saying there were good things in the RP programs most often mentioned some aspect of the program itself, such as course content and class organization (over 35 percent). Improved teacher behavior (22 percent) and interrelated courses (14 percent) were the only additional aspects frequently mentioned. (See Appendix B, Table B-3, for detailed tabulations.)

A question similar to those in the personal views index is, "Do your RP teachers do things differently?" The percent of the RP students answering "yes" to this question are shown in Table 11. These schools are grouped by the same procedures used for the personal views index.

Table 11

REACTIONS OF RP STUDENTS TO THEIR TEACHERS,
BY LEVEL OF ACCEPTANCE

	Juniors		Seniors	
	School	Percent	School	Percent
High	De Anza	88%	Harry Ells	88%
	San Lorenzo PreTech	88	Richmond	84
	San Lorenzo MDSE	88	De Anza	84
	Palo Alto	86		
Medium	Watsonville	74	Cubberley	73
	Harry Ells	67	Pacific	58
	Cubberley	56	El Cerrito	54
	Pacific	52		
Low	El Cerrito	43		
	Richmond	36		

The clusters are the same as for the personal views index except that, in the case of the seniors, El Cerrito joins the middle cluster. For the juniors, San Lorenzo MDSE moves to the high cluster, replacing Ells, which moved to the middle.

The elements of teacher behavior regarded by the students as different are shown in Table 12.

Table 12

PERCEPTION OF TEACHER DIFFERENCES BY RP STUDENTS

	Juniors		Seniors	
	No.	Percent	No.	Percent
Teachers work more closely together	37	27%	33	40%
Teachers organize classes better	9	7	6	7
Teachers explain things better	19	14	10	12
Teachers are more interested in students	46	34	19	23
Don't know, no answer	3	2	5	6
Miscellaneous	22	16	10	12

For both juniors and seniors, the prominent teacher changes were concerned with teachers being more interested in students and working more closely together. Other frequently mentioned factors include better explanations by teachers and better organization of class activities. Analysis of these perceptions by schools is not attempted, due to the small number of cases, but school data do not vary widely from the aggregated data (see Appendix B, Table B-4, for detailed tabulations).

Reactions of RP Students--Alumni and Their Parents

The design of this evaluation, as noted elsewhere, placed major reliance on intensive study of RP programs in actual operation. However, surveys were made of alumni of the programs, their parents, and comparison groups of students and parents. For alumni students, the following areas were investigated:

- Post-high school activities in school or employment
- Usefulness of high school as preparation for additional schooling or employment
- Future education and career plans

For parents, the queries were concerned exclusively with estimates of the general usefulness of high school for their children's post-high school activities.

Post-High School Activities--College. As shown in Table 13, there were more RP (92 percent) than Comparison Group (CG) students (85 percent) who had some kind of additional education after high school. This difference held for all schools.

The majority (about 85 percent of both RP and CG students who had additional education)had received it at a junior or community college.

Table 13

ADDITIONAL SCHOOLING SINCE LEAVING HIGH SCHOOL, FOR RP AND CG STUDENTS

		Alls Schools		Harry Ells		De Anza		Richmond		El Cerrito		Pacific		Cubberley	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Additional schooling since leaving high school	RP	108	92%	37	95%	24	96%	4	100%	10	100%	23	77%	10	100%
	CG	173	85	41	89	31	82	29	91	25	96	30	70	17	94
No additional schooling since leaving high school	RP	10	8	2	5	1	4	--	--	--	--	7	23	--	--
	CG	30	15	5	11	7	18	3	9	1	4	13	30	1	6
Total	RP	118	100%	39	100%	25	100%	4	100%	10	100%	30	100%	10	100%
	CG	203	100	46	100	38	100	32	100	26	100	43	100	18	100
Type of school attended by those who had additional schooling:															
Junior college	RP	93	86	31	84	21	88	4	100	9	90	19	83	9	90
	CG	146	84	34	83	28	90	25	86	22	88	22	73	15	88
4-year college or university	RP	16	15	5	14	2	8	--	--	--	--	7	30	2	20
	CG	32	18	12	29	6	19	1	3	3	12	8	27	2	12
Other schools (business, trade, etc.)	RP	8	7	3	8	3	13	--	--	1	10	1	4	--	--
	CG	19	11	5	12	4	13	3	10	4	16	2	7	1	6

About 15 percent went to a four-year college and 10 percent to other schools (e.g., business, trade). There was relatively little variation from this pattern among schools.

The length of time spent by both groups in a two- or four-year school is shown in Table 14. For all schools and classes together, there was little difference between the two groups. CG students reported a somewhat longer tenure in two- and four-year colleges. No comparison of schools was made, however, because of the small number of cases.

Table 14

LENGTH OF TIME IN RESIDENCE IN TWO- OR FOUR-YEAR COLLEGES FOR RP AND CG ALUMNI, FOR ALL SCHOOLS AND CLASSES

Length of Time (semesters)	RP		CG	
	No.	Percent	No.	Percent
2 or less	31	31%	50	31%
3-4	60	59	70	44
more than 4	11	11	39	26
Total	102	101%	159	101%

Since the first RP classes graduated in June 1964, up to the time of this survey (spring 1968), none of the alumni had been in school long enough to earn a four-year degree. However, 10 percent of the CG and 6 percent of RP students reportedly had earned an Associate in Arts or Science degree.

With the RP emphasis on technology and engineering (recall that all schools with alumni had a PreTech program), it would be expected that more RP than CG students would have a technically oriented major field of study (see Table 15). For all schools and classes 35 percent of RP versus 16 percent of the CG students were majoring in engineering. This was the case for all but one school (analysis by class was not possible because of small numbers of students). There were no other major differences in fields of study.

Table 15

MAJOR FIELD OF STUDY OF RP AND CG ALUMNI ATTENDING TWO- OR FOUR-YEAR COLLEGES, FOR ALL SCHOOLS AND CLASSES

	RP		CG	
Main Field	No.	Percent	No.	Percent
Business	9	9%	23	14%
Art	2	2	3	2
Physical Sciences	8	8	16	10
Social Sciences	7	7	10	6
Liberal Arts	7	7	19	12
Engineering	36	35	26	16
Communications	1	1	3	2
Professions	2	2	6	4
Education	6	6	25	16
All other	15	15	14	9
No answer	9	9	14	9
Total	102	100%	159	100%

Usefulness of High School as Preparation for College. Table 16 summarized the data for all schools and classes concerning the usefulness of high school in college work. As can be seen in this table, virtually no difference existed between the RP (81 percent) and CG students (78 percent). In four schools, the RP alumni rated high school as more useful than the CG group; however, in the remaining two schools the difference was reversed.

Table 16

RP AND CG ALUMNI VIEWS ON THE USEFULNESS OF HIGH SCHOOL AS PREPARATION FOR COLLEGE, FOR ALL YEARS, BY SCHOOL

	Useful*				Not Useful Plus Don't Know and No Answer				Total			
	RP		CG		RP		CG		RP		CG	
School	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All schools	88	81%	135	78%	20	19%	38	22%	108	100%	173	100%
Harry Ells	32	86	29	71	5	13	12	29	37	99	41	100
De Anza	23	96	28	90	1	4	3	10	24	100	31	100
Richmond	4	100	25	86	--	--	4	14	4	100	29	100
El Cerrito	8	80	21	84	2	20	4	16	10	100	25	100
Pacific	16	70	20	67	7	30	10	33	23	100	30	100
Cubberley	5	50	12	71	5	50	5	29	10	100	17	100

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* Includes "extremely," "very," and "somewhat" useful.

The reasons alumni give for considering high school useful in further schooling center primarily around the value of specific courses as preparation for college. Fifty-seven percent of the RP versus 45 percent of the CG alumni cited this as a reason (see Table 17). Nineteen percent of the RP mentioned the total RP program as opposed to 7 percent of the CG who mentioned College Prep.

Table 17

REASONS GIVEN BY RP AND CG ALUMNI FOR THE USEFULNESS OF HIGH SCHOOL IN FURTHER SCHOOLING

Useful Aspects of High School	RP	CG
Provided general background (e.g., good foundation, general education)	21%	40%
Enrollment in specific high school program (e.g., (Richmond Plan, College Prep)	19	7
Specific courses (e.g., English, Math, Science)	57	45
Other	3	8
Total	100%	100%

Note: Only four schools are represented in this table: Cubberley, De Anza, El Cerrito, and Richmond.

There were not enough respondents who said high school was not useful (10 RP and 25 CG) to warrant tabulation.

Post-High School Activities--Employment. A large majority of alumni reported they had held full-time jobs since leaving high school (see Table 18). For RP students, the variation was between 100 percent (Cubberley) and 50 percent (El Cerrito). However, the other schools clustered in a narrower range, roughly between 65 and 75 percent.

Table 18

RP AND CG ALUMNI HOLDING A FULL-TIME JOB SINCE LEAVING HIGH SCHOOL, BY SCHOOL

	Have Held Full-Time Job				Have Not Held Full-Time Job			
	RP		CG		RP		CG	
School	No.	%	No.	%	No.	%	No.	%
All schools	81	69%	150	74%	37	31%	53	26%
Harry Ells	25	64	35	76	7	22	14	36
De Anza	18	72	28	74	7	28	10	26
Richmond	3	75	25	78	1	25	7	27
El Cerrito	5	50	19	73	5	50	7	27
Pacific	20	67	30	70	10	33	13	30
Cubberley	10	100	13	72	--		5	28

The types of full-time jobs held by both RP and CG alumni are remarkably similar. Table 19 shows that only in the cases of "manager," "official," "proprietor," and "laborer" were there noteworthy differences--mord CG alumni reported holding these jobs.

Table 19

TYPE OF JOB HELD BY RP AND CG ALUMNI, FOR ALL CLASSES AND SCHOOLS

	RP		CG	
Type of Job	No.	Percent	No.	Percent
Professional, technical	4	5%	7	5%
Manager, official, proprietor	1	1	9	6
Clerical	19	23	25	17
Sales worker	7	9	15	10
Craftsman, foreman	13	16	21	14
Operative	26	32	47	31
Service worker	5	6	8	5
Laborer	5	6	18	12
No answer	1	1		
Total	81	99%	150	100%

Table 20 indicates the number of months alumni held full-time jobs. About half of both the RP and CG students reported they held full-time jobs for over a year. This pattern would probably vary by year of graduation, but the number of cases was too small for analysis by year.

Table 20

RP AND CG ALUMNI TENURE IN FULL-TIME JOBS FOR ALL SCHOOLS

Length of Time	RP		CG	
Employed (mo)	No.	Percent	No.	Percent
6 or less	20	24%	43	28%
7-12	19	23	29	20
13 or more	42	52	76	50
No answer	--	--	2	1
Total	81	99%	150	99%

In regard to the usefulness of high school as preparation for a job, there was a more sizable difference in opinion between the RP and CG students. As Table 21 indicates, 65 percent of the RP students versus 51 percent of the CG students rated the program as useful in preparing for employment. In four of the six schools, more RP alumni reported high school was useful than did the CG alumni. This was most pronounced at Ells and El Cerrito high schools.

Table 21

RP AND CG ALUMNI VIEWS ON THE USEFULNESS OF HIGH SCHOOL AS PREPARATION FOR EMPLOYMENT, FOR ALL YEARS, BY SCHOOL

	Useful*				Not Useful plus Don't Know and No Answer				Total			
	RP		CG		RP		CG		RP		CG	
School	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All schools	53	65%	77	51%	28	34%	73	49%	81	99%	150	100%
Harry Ells	20	80	16	46	5	20	19	55	25	100	35	101
De Anza	12	67	16	57	6	33	12	43	18	100	28	100
Richmond	1	33	14	56	2	67	11	44	3	100	25	100
El Cerrito	4	80	12	63	1	20	7	37	5	100	19	100
Pacific	11	55	10	33	9	45	20	67	20	100	30	100
Cubberley	5	50	9	69	5	50	4	31	10	100	13	100

---

* Includes "extremely," "very," and "somewhat" useful.

As shown in Table 22, over 60 percent of RP alumni, as compared with 24 percent of CG students, thought the most useful aspect of high school in preparing for employment was the technical background it provided.

Table 22

REASONS GIVEN BY RP AND CG ALUMNI FOR THE USEFULNESS OF HIGH SCHOOL AS PREPARATION FOR EMPLOYMENT*

	RP	CG
Technical background, courses	62%	24%
Basic education essential	19	24
Developed ability to meet people	10	22
All other comments	10	30
Don't know, no answer	--	--
Total	101%	100%

Lack of any relation of high school to the type of work actually performed was the only reason given for high school lacking as a preparation for employment, as shown in Table 23.

Table 23

REASONS GIVEN BY RP AND CG ALUMNI FOR HIGH SCHOOL NOT BEING USEFUL AS PREPARATION FOR EMPLOYMENT*

	RP	CG
No relation to type of work	87%	74%
All other comments	8	22
Don't know, no answer	5	4
Total	100%	100%

---

[*] Note: Only four schools are represented in this table: Cubberley, De Anza, El Cerrito, and Richmond.

Future Education or Career Plans. "How far do you expect to go in school?" This query was made of all alumni, with the results shown in Table 24.

Table 24

FUTURE EDUCATION PLANS OF RP AND CG ALUMNI, FOR ALL SCHOOLS

	RP		CG	
Education Plans	No.	Percent	No.	Percent
Business, technical, or vocational school	9	8%	15	7%
Junior college degree	22	19	16	8
Four-year college degree	48	41	71	35
Graduate degree	23	19	59	29
Other schooling	4	3	15	7
No other schooling	3	3	17	8
Don't know, no answer	9	8	10	5
Total	118	100%	203	100%

More RP than CG alumni (19 versus 8 percent) said they expect to get a junior college degree. However, more CG than RP alumni (29 versus 19 percent) aspired to graduate degree.

As indicated in Table 25, a close correspondence existed between the career plans of RP and CG alumni when asked "What type of work do you think you will be doing 10 to 15 years from now?"

Table 25

FUTURE CAREER PLANS OF RP AND CG ALUMNI

	RP		CG	
	No.	Percent	No.	Percent
Professional	26	53%	61	54%
Manager, official	10	20	16	14
Clerical	1	2	1	1
Sales	2	4	5	4
Craftsman, foreman	3	6	9	8
Operative	--	--	1	1
Service	--	--	5	4
Don't know, no answer	7	14	16	14
Total	49	99%	114	100%

In no occupational category was there more than a 4 percent difference between RP and CG alumni. Both groups seemed somewhat less than realistic, with over 50 percent aiming for professional careers.

Alumni and Current* Parents' Views on the Usefulness of High School

Parents attributed a high degree of utility to high school, as shown in Table 26. With only five exceptions, three-fourths or more of the parents, both RP and CG, felt it was useful. Generally, the differences between RP and CG parents were small. The exceptions were at San Lorenzo Valley (both alumni and current parents) and Harry Ells (current parents only), where RP parent ratings were markedly higher than for CG parents.

RP alumni parents rated high school utility higher than CG alumni parents; only at Cubberley was this not the case. For current parents, however, there were four schools in which RP parents rated utility higher and four in which CG parents rated utility higher.

For all schools and all years there was a fair degree of similarity between the reasons given by parents of RP and CG students for high school being useful or not (see Table 27). The major consistent difference between the groups was that "the high school experience created interest in and motivation for learning and study"; 16 to 20 percent of RP versus 4 to 6 percent of the CG parents gave this reason. This was to be expected, given the fact that one of the major goals of the RP is to create this interest and motivation.

By far the majority of the parents (over 40 percent) felt preparation for college was the main reason for the usefulness of high school. Preparation for employment and preparation for advancement in the military service were the only other prominent reasons cited for high school's usefulness.

The major reason given for high school not being useful is that the students' program is disorganized or poorly coordinated (see Table 28). Another important reason is a negative attitude on the part of the student himself, which prevents him from profiting from high school. More CG than RP parents gave this as a reason.

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* "Current" refers to parents of seniors in high school at the time the interview was made.

Table 26

RP AND CG PARENTS' VIEWS ON THE USEFULNESS OF HIGH SCHOOL, FOR ALL YEARS, BY SCHOOL

School	Alumni Parents								Current Parents							
	Useful*				Not Useful plus Don't Know and No Answer				Useful*				Not Useful plus Don't Know and No Answer			
	RP		CG		RP		CG		RP		CG		RP		CG	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All schools	233	86%	402	82%	39	14%	88	18%	79	79%	140	82%	21	21%	30	18%
Harry Ells	62	78	68	67	17	21	34	34	14	88	11	65	2	13	6	35
De Anza	61	91	104	87	6	9	15	13	15	94	40	98	1	6	1	2
Richmond	20	95	82	88	1	5	11	12	11	61	32	78	7	39	9	22
El Cerrito	21	88	60	86	3	13	10	14	9	75	22	85	3	25	4	15
Pacific	36	90	37	77	4	10	11	23	7	78	8	73	2	22	3	27
Cubberley	29	78	44	88	8	22	6	12	10	83	11	79	2	17	3	21
Palo Alto									7	64	14	82	4	36	3	18
San Lorenzo									6	100	2	67			1	33

---

* Includes "extremely," "very," and "somewhat" useful.
See Appendix for the questionnaires used in the survey of parents.

Table 27

REASONS GIVEN BY RP AND CG PARENTS FOR FEELING HIGH SCHOOL IS USEFUL

	Alumni Parents		Current Parents	
	RP	CG	RP	CG
Preparation for employment	22%	20%	27%	21%
Preparation for college	42	44	29	47
Program created motivation for an interest in school	16	6	20	4
All other comments	21	27	25	27
Don't know, no answer	--	3	2	3
Total	101%	100%	103%	102%

Note: Only four schools are represented in this table: Cubberley, De Anza, El Cerrito, and Richmond.

Table 28

REASONS GIVEN BY RP AND CG PARENTS FOR FEELING HIGH SCHOOL IS NOT USEFUL

	Alumni Parents		Current Parents	
	RP	CG	RP	CG
Inadequate preparation for employment	3%	10%	32%	14%
No college preparation	23	13	5	3
Inadequate teachers	13	16	11	11
Poorly organized, inadequate program	29	24	37	27
Negative student attitudes (student is to blame)	19	28	16	22
All other comments	6	7	--	24
Don't know, no answer	6	1	--	--
Total	99%	99%	101%	101%

Note: Only four schools are represented in this table: Cubberley, De Anza, El Cerrito, and Richmond.

Comparison of Changes in Current RP and CG Students

Since this evaluation project began after the experimental programs had started in eight of the 10 schools, measurements on the students before entering the programs were not possible. An attempt was made to overcome this difficulty by having the RP and CG students answer certain questions as if they were in the tenth grade. The replies to these questions were used as a point of reference for estimating change when the identical set of questions was asked from the perspective of the student as a junior or a senior.* The chart below illustrates the logic of this model of change.

	Simulated Sophomore Response	Current Response as Juniors or Seniors
Richmond Plan students		
Comparison Group students		

The questions were intended to illuminate three major issues: (1) the degree to which, in the eyes of the students, program goals had been realized; (2) whether students had changed personally in directions to be expected after exposure to the experimental programs; and (3) change in grade point average and attendance. The questions related to program goals included:

- How much relation did (does) your school work seem to have to your future? (a lot, some, very little, none)
- How often did (do) your teachers try to relate your courses to each other? (all of the time, most of the time, some of the time, none of the time)
- I received (receive) individual help, if I needed (need) it from: (all of my teachers, most of my teachers, a few of my teachers, none of my teachers)

---

* The two identical sets of questions were separated by a few unrelated questions in an attempt to give the respondents a chance to regain perspective after the first set had been answered.

- I feel that most of my teachers were (are): (very interested in me, fairly interested in me, not interested in me, rather uninterested in me, didn't care at all about me)

The questions related to the issue of personal change due to the experimental programs include:

- I spoke (speak) out in classes (very often, fairly often, a little, not at all)

- How did (do) you feel about school? (very unhappy--I wanted to quit; somewhat unhappy--but I wanted to finish; didn't care--I was just drifting; enjoyed it a little; enjoyed it very much)

- How much confidence did (do) you have in yourself? (a lot, some, very little, none)

- How good a student did (do) you try to be? (top of my class, above the middle of my class, in the middle of my class, just good enough to get by)

- I studied (study) (very hard, fairly hard, a little, not at all)

In addition to the foregoing questionnaire items, statistics were obtained on grade point average and attendance for the sophomore and junior or senior year.

For all of these items, the amount of change was computed from the difference between the replies (or statistics) on the first and second set of responses (or statistics). A change was movement from one check in the first set of questions to a different check in the second set.* All change was classified as either positive (in the direction expected as derived from the goals of the RP) or negative. In the following analysis, the percent of positive change is used as the basis for comparing schools. The percents are computed on a base of only those who changed.

Changes in Program Goals. Table 29 shows the results for the four questions relating to program goals combined as an index. (The data from which the indices were derived appear in Appendix B, Tables B-5 and B-6.) By far the most interesting feature of these data is the generally high level of positive change for the RP program students--in only one school (the Richmond High juniors) does the amount of positive change dip below 80 percent.

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* Any amount of movement was computed as change.

Table 29

POSITIVE CHANGE OF RP AND CG STUDENTS ON VARIABLES RELATED TO RP GOALS, BY SCHOOL

School	Juniors RP	Juniors CG	Seniors RP	Seniors CG
Harry Ells	91%	56%	95%	81%
De Anza	99	65	85	73
Richmond	75	62	81	86
El Cerrito	100	71	91	65
Pacific	82	80	89	46
Cubberley	86	90	97	68
Palo Alto	96	61		
San Lorenzo Valley PreTech	97	60		
San Lorenzo Valley MDSE*	93			
Watsonville*	96			
All schools	92	68	90	70

* No comparison group data.

The differences between RP and CG students show a consistently higher amount of positive gain for the RP programs. The only two exceptions are the Cubberley juniors and the Richmond seniors.

However, the generally high level of positive change for CG students is noteworthy--the average positive change for all schools is nearly 70 percent, contrasting with an all-school average of about 90 percent for the experimental programs.

The difference might be due to the effect of the RP programs. However, if these measures were that sensitive, one would also expect to find wide variation among schools in terms of "how well they are working" or how closely they conform to RP principles. No such consistency is observed. In fact, some of the programs known to be grossly deficient in conforming to RP principles are high on positive change.*

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* A possible alternative explanation lies in the fact that RP students are treated as experimental students in several ways (e.g., voluntary participation, uniquely selected, together as a group for most of the day, and special names for courses). Additionally, each question in this index embodies a part of the doctrine of the RP. This doctrine is typically presented to student candidates and their parents and is reinforced frequently in the course of the programs. There could be, therefore, a tendency for students to think they are getting what they have been told they will get.

Personal Changes. The changes in RP and CG students on an index composed of five questions concerning personal qualities that should change positively with exposure to the RP are presented in Table 30. For the RP students there is a generally high level of positive change. For juniors in all schools, the average positive change is 81 percent for the RP and 62 percent for the CG--only at Richmond is the change higher for the CG. For the seniors the level of positive change and differences between RP and CG students drops markedly. For all schools the average change for the RP is 68 percent and for the CG 66 percent. In three of the schools the RP students show more positive change than the CG and in the other three schools the pattern is reversed. (The data from which the index is derived are in Appendix B, Tables B-7 and B-8.)

Table 30

POSITIVE CHANGE OF RP AND CG STUDENTS ON VARIABLES RELATED TO PERSONAL CHANGE EXPECTED AS A RESULT OF THE RP PROGRAMS, BY SCHOOL

School	Juniors		Seniors	
	RP	CG	RP	CG
Harry Ells	81%	73%	69%	59%
De Anza	91	66	73	59
Richmond	66	68	74	80
El Cerrito	78	65	48	58
Pacific	76	60	62	57
Cubberley	80	73	84	87
Palo Alto	88	57		
San Lorenzo Valley PreTech	85	39		
San Lorenzo Valley MDSE*	88			
Watsonville*	82			
All schools	81	62	68	66

---

* No comparison group data.

Students' Feeling about Having a Say in Their Education. The percent of RP and CG students who felt they had influence in determining their education is presented in Table 31. These data viewed in their broadest context reveal that there is essentially no difference between the RP and CG students, as the totals for all schools indicate (for the juniors, 58 percent RP and 55 percent CG; for the seniors, 60 percent RP and 51 percent CG). Almost all RP seniors rank higher than CG; in only one school, Richmond High, is this trend reversed.

Of those students feeling they had a say about their high school, a question was asked concerning what it was they had a say about. Only

Table 31

STUDENTS FEELING THEY HAD A SAY ABOUT THEIR EDUCATION

School	RP				CG			
	Junior		Senior		Junior		Senior	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Ells	10	42%	19	76%	9	45%	18	55%
De Anza	13	52	15	60	28	53	21	45
Richmond	7	26	5	31	24	50	22	63
El Cerrito	6	43	7	54	21	68	21	49
Pacific	10	44	10	53	19	51	14	42
Cubberley	10	67	10	83	11	69	5	56
Palo Alto	12	86			12	52		
San Lorenzo Valley PreTech	12	75			10	56		
San Lorenzo Valley MDSE*	16	94						
Watsonville*	20	74						
All schools	116	58	66	60	134	55	101	51

---

* No comparison group data.

two factors came up with significant frequency (see Table 32). These data show that more CG than RP students said they had a choice in class selection and content, consistently true for all schools.* More RP than CG students felt they had a say about teacher-student relationships; this is consistent for all schools with the exception of Cubberley, where it is not mentioned at all. The remaining comments are not mentioned with enough frequency to tabulate.

Educational Aspirations of Students. Table 33 shows the estimates by RP and CG students concerning how far they plan to go in school. The educational aspirations of the majority of the students range upward through the four-year college. There is a tendency for more RP than CG students to estimate they will obtain a junior college education. The differences between the two groups in this respect are slight; however, there is a tendency for more CG than RP students to say they will complete graduate school. This is true for all schools except De Anza, where the estimates are equal.

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* This is to be expected since CG students have more classes to have a say about--the RP student has most, if not all, of his courses selected when he enters the experimental program.

Table 32

FACTORS ABOUT WHICH STUDENTS HAD A SAY

	Class Choice or Content of Class				Teacher/Student Relationships				Miscellaneous				Don't Know, No Answer			
	RP		CG		RP		CG		RP		CG		RP		CG	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Harry Ells	19	66%	20	74%	4	14%	-	-%	5	17%	4	15%	1	3%	3	11%
De Anza	18	64	42	86	8	29	-	-	1	4	5	10	1	4	2	4
Richmond	9	75	35	76	1	8	3	7	1	8	6	13	1	8	2	4
El Cerrito	10	77	33	79	1	8	2	5	1	8	6	14	1	8	1	2
Cubberley	13	65	12	75	--	--	-	-	2	10	1	6	5	25	3	19
Palo Alto	7	58	11	92	1	8	-	-	4	34	1	8	-	--	-	--
Pacific	14	70	25	76	3	15	1	3	3	15	7	21	-	--	-	--
San Lorenzo Valley PreTech	7	58	7	70	1	8	-	-	3	25	3	30	1	8	-	--
San Lorenzo Valley MDSE*	11	69	--	--	2	13	-	-	3	19	-	--	-	--	-	--
Watsonville Hope*	6	30	--	--	3	15	-	-	10	50	-	--	1	5	-	--
All schools	104	63	185	79	24	13	6	3								

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* No comparison group data.

Table 33

EDUCATIONAL ASPIRATIONS OF RP AND CG STUDENTS

School Plans for the Future		Total		Ells		De Anza		Richmond		El Cerrito		Pacific		Cubber-ley		Palo Alto		SLV PreTech		SLV MDSE		Watson-ville HOPE	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Not finish high school	RP	--	--%	--	--%	--	--%	--	--%	--	--%	--	--%	--	--%	--	--%	--	--%	--	--%	--	--%
	CG	1	--	--	--	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
High school, no further	RP	21	7	2	4	1	2	4	10	4	15	4	10	2	7	1	7	--	--	1	6	2	7
	CG	32	7	1	2	8	8	5	6	5	7	8	11	1	4	--	--	4	22	--	--	--	--
Business, technical, or vocational school	RP	30	10	3	6	5	10	6	14	1	4	3	7	3	11	2	14	--	--	3	18	4	15
	CG	30	7	5	9	9	9	2	2	3	4	7	10	--	--	3	13	1	6	--	--	--	--
Junior college	RP	115	37	21	43	17	34	18	43	1	4	20	48	7	26	4	29	9	56	5	29	13	48
	CG	132	30	14	26	33	33	25	30	16	22	23	33	7	28	8	35	6	33	--	--	--	--
4-year college	RP	107	34	22	45	22	44	7	17	12	44	11	26	12	44	7	50	5	31	6	35	3	11
	CG	156	35	17	32	36	36	30	36	27	37	21	30	10	40	9	39	6	33	--	--	--	--
Grad School	RP	20	6	--	--	4	8	2	5	7	26	1	2	2	7	--	--	1	6	1	6	2	7
	CG	70	16	14	26	8	8	14	17	21	28	7	10	5	20	1	4	--	--	--	--	--	--
Other	RP	16	5	1	2	1	2	5	12	2	7	2	5	1	4	--	--	1	6	--	--	3	11
	CG	22	5	2	4	5	5	5	6	2	3	4	6	1	4	2	9	1	6	--	--	--	--
No answer	RP	2	1	--	--	--	--	--	--	--	--	1	2	--	--	--	--	--	--	1	6	--	--
	CG	3	1	--	--	--	--	2	2	--	--	--	--	1	4	--	--	--	--	--	--	--	--
Total	RP	311	100%	49	100%	50	100%	42	101%	27	100%	42	100%	27	99%	14	100%	16	99%	17	100%	27	99%
	CG	446	101	53	99	100	100	83	99	74	101	70	100	25	100	23	100	18	100	--	--	--	--

Change in Grade Point Average and Attendance. Table 34 shows the amount of positive change of grade point average. For all schools the RP students show a larger gain than the CG, both for juniors (RP 81 percent and CG 58 percent) and seniors (RP 81 percent and CG 69 percent). This pattern is found in all schools except the juniors at Palo Alto and seniors at El Cerrito and Ells. The generally high level of positive change for the RP students is noteworthy--in no school did the level of positive change go below 50 percent, and in four cases 100 percent of the students had positive change on grades.

Changes in attendance are smaller than changes in grades, as indicated in Table 35. The all-school average shows positive changes of 57 and 43 percent for RP juniors and seniors, compared with 48 and 32 percent for CG juniors and seniors. While the RP students show a higher positive change overall, there are several cases (De Anza, Pacific, and Cubberley juniors; and Ells and Pacific seniors) where the pattern is reversed (see Appendix B, Tables B-9 and B-10, for detailed data on changes in grade point average and attendance).

Table 34

POSITIVE CHANGES IN GRADE POINT AVERAGE FROM THE SOPHOMORE TO THE JUNIOR OR SENIOR YEARS, BY SCHOOL

	Juniors		Seniors	
	RP	CG	RP	CG
School	%	%	%	%
Harry Ells	67%	64%	71%	71%
De Anza	89	56	87	66
Richmond	50	62	75	59
El Cerrito	100	58	50	71
Pacific	75	45	100	69
Cubberley	92	78	100	80
Palo Alto	75	80		
San Lorenzo Valley PreTech	100	17		
All schools	81	58	81	69

Table 35

POSITIVE CHANGES IN ATTENDANCE FROM THE SOPHOMORE TO THE JUNIOR OR SENIOR YEARS, BY SCHOOL

School	Juniors RP %	Juniors CG %	Seniors RP %	Seniors CG %
Harry Ells	65%	46%	12%	18%
De Anza	52	58	29	26
Richmond	63	50	50	45
El Cerrito	40	33	--	20
Pacific	54	55	38	44
Cubberley	33	70	88	40
Palo Alto	64	42		
San Lorenzo Valley PreTech	83	29		
All schools	57	48	43	32

Teachers' Comments on Student Benefits

All RP teachers were asked about the benefits, if any, accruing to the students. These queries were made in the context of tape-recorded depth interviews.

All teachers felt the students benefited in certain ways from their RP-type programs. The most important benefits mentioned by the teachers include:

- Feeling of success and worth. Teachers emphasized that many RP students seem to acquire a new faith in themselves and in their ability.

- Academic learning. Many RP students had been drifting through high school unable or unwilling to take "solid" courses. The teachers note that through the RP programs, these students can take such courses as Science and Mathematics and many are succeeding in them.

- Social relations and social skills. RP students often seem to come out of their shells. Formerly timid students find themselves giving a speech to the class or taking part in class discussions. Maturity is an attribute often acquired in the course of the RP programs.

- Group identity. Teachers are greatly impressed by the group identity achieved. While often difficult to cope with, as a problem of discipline, the teachers recognize the positive influence that a feeling of belonging can have, particularly for a student that has not been succeeding.

- Vocational preparation. Certain programs are particularly beneficial in giving students a realistic outlook on what post-high school employment is really like.

Observations of the Research Staff

A consensus of opinion concerning program effectiveness was reached by the SRI team after extensive classroom observation. In some of the programs, four SRI observers visited the classrooms at different times throughout the year; both students and teachers were interviewed individually, and collectively. After this extensive contact with the program and its participants, the research team believed they had a responsibility to report the results of their observations, although these conclusions cannot be supported by statistical data.

The program benefit most frequently mentioned by the RP students was increased academic ability; teachers, likewise, most often suggested that primarily the students were getting a good basic education. It appeared to the SRI observers that in some of the RP programs the students were receiving solid, academic training. Even students who were dissatisfied with certain aspects of the program granted they were taking courses they would not otherwise have been exposed to.

In the most effective programs, problem solving through student participation in the decision-making process was emphasized. In the experimental laboratory situations, inventiveness was stressed. Students were encouraged first to fashion something of their own design and then to make it operate; often, makeshift materials were used. The results were sometime crude and occasionally inoperable, but the application of academic theory to the construction of these simple projects seemed extremely effective.

Although some of the RP students mentioned the development of technical competence as a major benefit, from the SRI observations it did not appear that students were developing a high degree of manual skill. Overall, the programs represented a recombining of the academic with the vocational, with little attention given to specific occupational training.

Generally, there was a good deal of open communication between the students and teachers; discussions about social issues were frequent. One of the most impressive aspects of the RP program, in fact, was the degree of openness with which all topics were discussed. This benefit, mentioned often by both teachers and students, was confirmed by the research staff; in the freedom and relaxed atmosphere of the RP classrooms, students appeared to be developing communication skills and the ability to speak with ease before groups.

By breaking down subject matter barriers, the interdisciplinary approach, where effectively applied, resulted in major benefits to both students and teachers. As teachers became less subject-matter specialists and more cooperative team members, they strengthened their own professional expertise and brought to the classroom knowledge gained in fields other than their own. Additionally, they gained increased knowledge and understanding of student progress and problems in other classrooms. In turn, students became aware that their teachers cared about them as individuals.

In some programs, the generally high level of rapport between most of the RP teachers and their students was evident; classroom interaction revealed the mutual regard felt. Many of the RP students felt that their teachers were the best part of the program. The fact that teachers worked together in relating subject matter was not nearly as important to the RP students as the realization that teachers cared about them as individuals. By assisting with the personal problems as well as the career guidance of their students, the RP teacher seemed to have taken on a new role--that of a counselor.

In some programs, students felt that they had some control over their learning environment. Although this is not reflected in the statistical analysis, the SRI observers noted that students were being given a say in program planning and operation. On occasion, curriculum revisions were made on the basis of student suggestions.

Effects on Other Programs

General Faculty Reactions. "Did the RP programs have any effects on other programs within your schools?" This question was asked in the survey of non-RP faculties in all schools--about half said "yes."

As shown in Table 36, there was considerable variation by academic department. For all departments there was a high proportion of teachers who viewed these effects as positive; English and Social Studies were highest.

Table 36

PERCENTAGE OF GENERAL FACULTY SUGGESTING POSITIVE AND NEGATIVE EFFECTS OF RP PROGRAMS, BY DEPARTMENT ASSIGNED

	All Depts.	Comm.	Eng.	Lang.	Fine Arts	IA	PE	Science and Math	Social Studies
Positive	65%	65%	90%	60%	14%	30%	54%	62%	79%
Negative	23	35	--	20	71	60	46	19	7

The major positive effect of the RP programs was viewed as helping to develop an awareness of the need for change. Other positive effects include beneficial effects on the RP students and the introduction of other RP-type experimental programs. Two negative effects were advanced: problems of scheduling and students taken away from other classes.

Actual Introduction of Other RP-Type Programs. Table 37 gives a tally of the number and types of other programs introduced in schools included in this study.

Table 37

POSSIBLE INFLUENCES OF THE RP PROGRAMS ON ADDITIONAL RP-TYPE PROGRAMS

School	Additional RP Programs Introduced	Additional RP-Type Programs Being Considered
Harry Ells	FEAST	Paramedical
De Anza		Paramedical, History
Richmond		
El Cerrito		
Pacific	FEAST	Industrial Arts
Cubberley		Humanities
Palo Alto		
San Lorenzo Valley PreTech	MDSE	
San Lorenzo Valley MDSE	Senior RP Humanities	Forestry, Construction
Watsonville HOPE	SMART (Business)	

Six additional programs were introduced and seven were being seriously considered. There may well be more RP-type programs under consideration--the programs included in Table 37 were those specifically mentioned by school staff.

In addition to the introduction of programs like the RP, there were many comments by teachers and others that the RP program in their schools had had an effect on their teaching and on the operation of the regular programs. Many RP teachers noted that their attitudes toward teaching had changed for the better, and that the interests of the student were more prominent in their minds. Others noted that they were trying to apply the principles of the RP to their regular classes. Still others said that the RP experience had made them re-examine their entire philosophy of teaching.

Some teachers, particularly in the first year programs, mentioned that the extreme demands of RP teaching had caused them to neglect their regular classes. Many seemed decidedly anxious about the possibility of their other students suffering due to the relative lack of preparation given the non-RP classes.

Awareness of and Attitudes toward RP Programs

Any attempt to tell the story of a major curriculum reform would be incomplete without evidence concerning the way the reform program was viewed by those not actually participating in it. This kind of evidence is important because the qualities attributed to a program can affect the people actually in it. Additionally, the reactions to experimental programs reflect in part the nature and effectiveness of information programs (formal and informal) accompanying the experimental program.

In the 10 schools, a questionnaire survey was conducted with non-RP students and teachers. (Details of the procedures used in these two surveys appear in Appendix A.) In general, five issues were dealt with:

1. Awareness of the program.

2. Extent of knowledge about the program.

3. Estimates of how successfully the program is operating.

4. Estimates of the goals of the program and the type of students for which it is designed.

5. Estimates of interest in participating in the program.

Reactions of the General Student Body

Table 38 presents results of a series of questions posed to the general student body at all of the schools. The first question was a qualifying one, asking whether the student was aware of the program. Variability on this question is enormous, ranging from over 89 percent at San Lorenzo Valley High PreTech program to 27 percent at Palo Alto High. The questionnaire was set up so that students who said they were not aware of the program within their school answered no more questions. Therefore, the remaining analysis concerns only those students in the 10 schools who were aware of the program.

The degree of knowledge the students reported they had of the experimental programs within their schools is rather limited. About a quarter of the students in each school reported they knew a lot about the RP, but the range is large: from 18 percent at El Cerrito to 49 percent at San Lorenzo Valley PreTech. There is a slight but discernible tendency for the programs that are ranked high in terms of effectiveness to have their respective student bodies better informed about the programs.

The majority of the general student body view their experimental programs as successful. As the data in Table 39 show, over three-quarters of the student body in each school think that their experimental program is very or somewhat successful. However, there is wide variability with

Table 38

SELECTED REACTIONS OF THE GENERAL STUDENT BODY TO RP PROGRAMS

School	Awareness by Program[*]		High Knowledge[†]		High Success[‡]		Interested in Being in Program[§]	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Harry Ells	278	72%	114	41%	221	81%	55	35%
De Anza	360	87	123	34	305	87	63	31
Richmond	193	53	42	22	124	67	48	38
El Cerrito	121	57	22	18	63	55	13	25
Pacific	484	69	125	26	315	68	26	13
Cubberley	309	82	113	37	180	67	14	8
Palo Alto	151	28	52	35	82	63	11	16
San Lorenzo Valley PreTech	424	89	206	49	357	87	95	42
San Lorenzo Valley MDSE	282	86	125	45	246	88	69	25
Watsonville	210	47	48	23	135	66	38	33
Total	2,812	66	972	26	2,027	76	432	27

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[*] Percent aware of RP program.

[†] A "lot" or "some" knowledge.

[‡] "Very" or "somewhat" successful.

[§] Percent saying they would be interested in taking an RP program.

the percentage ranging from 55 at El Cerrito to 88 at San Lorenzo Valley MDSE. The rankings on estimates of success of the program are associated fairly closely with the measures of effectiveness of the program as measured by the personal views of the RP students themselves.

A fairly large number of the general student body (27 percent for all schools) reported that they would be interested in taking the experimental programs in their schools, ranging from 8 percent at Cubberley to 42 percent at San Lorenzo Valley PreTech. This represents, apparently, a sizable pool of potential candidates. Pacific High, which drastically modified its RP program because of a shortage of candidates, is at the extreme low end of the interest range. Palo Alto and El Cerrito, where the programs have been terminated, also have a low level of general student interest.

Over 40 percent of the non-RP students think the goals of RP programs are primarily vocational in nature. The range is from 26 percent at Richmond High to 75 percent at San Lorenzo Valley MDSE. Other goals are mentioned infrequently.

The general student body, when asked what type of student the RP programs are designed for, responded in two dimensions. The first concerned the preparation for post-high school activities. As with the views on goals of the program, the emphasis is on students with vocational interests, with nearly 20 percent of the students in all schools making this comment (varying from 11 percent at Richmond to 41 percent at San Lorenzo Valley MDSE). The second dimension concerns the ability level of the student in the RP programs. By far the bulk of the responses indicated a view of the RP students as "average" (11 percent) and "average and above" (11 percent).

Reactions of the Non-RP Teachers

One would expect that teachers would be more informed than students about experimental programs within their school. This expectation is borne out by the data presented in Table 39. In most schools 100 percent of the teachers were aware of their experimental RP programs: only at Palo Alto High (62 percent) and Watsonville High (88 percent) does the level of awareness go below 100 percent.

Similarly, one would expect a higher degree of knowledge on the part of teachers, compared with students, concerning these experimental programs. In every school but Palo Alto High (45 percent), well over half of the teachers had "a lot" or "some" knowledge of the programs. The variation, ranging from 45 percent to over 81 percent, at Harry Ells High, is decidedly large.

The degree of success attributed to their programs by the teacher is typically very high with the average for all schools being about 75 percent. Only at Palo Alto High and El Cerrito High do the estimates drop below 50 percent (both of these schools dropped the RP). The remaining schools have estimates ranging upward from nearly 80 percent to over 90 percent. Most of the experimental programs have an excellent reputation for effectiveness.

Table 39

SELECTED REACTIONS OF NON-RP TEACHERS TO RP PROGRAMS, BY SCHOOL

School	Awareness of Program*		High Knowledge†		High Success‡		Interested in Teaching RP§	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Harry Ells	32	100%	26	81%	29	91%	20	63%
De Anza	54	100	31	57	41	80	20	37
Richmond	54	100	23	43	37	71	13	24
El Cerrito	29	100	17	59	8	32	4	14
Pacific	34	100	24	71	31	91	9	26
Cubberley	44	100	31	70	34	81	20	45
Palo Alto	29	62	13	45	14	56	12	41
San Lorenzo Valley PreTech	21	100	15	71	19	90	10	48
San Lorenzo Valley MDSE	18	100	9	50	17	94	3	17
Watsonville	57	88	32	56	46	81	17	30
Total	372	93	221	59	276	77	128	35

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* Percent aware of RP program

† A "lot" or "some" knowledge.

‡ "Very" or "somewhat" successful.

§ Percent saying they would be interested in taking an RP program.

The goals of the RP programs, as perceived by the general faculty, center around vocational pursuits, a tendency that was also found with the general student body. Most estimates of vocational goals for the experimental programs range slightly on either side of 20 percent with the one exception of Watsonville High, where 62 percent of the teachers feel the program is vocationally oriented. (This is to be expected since the HOPE program at Watsonville is the most outspokenly vocational of all programs included in this study.) Other reasons frequently mentioned include goals descriptive of the goals of experimental programs themselves (18 percent), goals concerned with the need for motivation of the average student (16 percent) and goals concerned with post-high school vocational and college activities (13 percent). The numbers of teachers responding to the questions are too few to make comparisons by school.

What type of student do the general teachers think the RP programs are designed for? By far the bulk of the teachers responded to this question in terms of the ability of the student, with most of the responses being clustered in the three categories of "average," "average and above," and "average and below." Over 30 percent of the teachers stated that the students were "average," ranging from 22 percent at Cubberley to 47 percent at Pacific. Adding to this those typing the RP student as "average and above" (29 percent) and "average and below" (5 percent), well over 50 percent of the teachers in all schools feel the students range rather narrowly above and below the average.

How many of the general faculty would be interested in teaching RP-type programs? The number saying "yes" ranges from a very low 14 percent at El Cerrito High to a high of 62 percent at Harry Ells High, with an average for all schools of around 35 percent. There was, therefore, a relatively large pool of candidate teachers for the experimental programs.

There are two outstanding reasons why teachers said they would be interested in teaching the experimental programs. The one most often mentioned concerns attributes of the RP programs, including interrelation of subjects and interdisciplinary teaching. The other major reason is that the RP-type program was viewed as being needed by the students in the teacher's own school. There is a large variation between schools in the frequency with which these reasons were mentioned, but the number of cases is too small for reliable analysis.

Costs Associated with the RP Programs

There are a wide variety of additional costs of an RP program over the "normal" program. A number of these costs have been alluded to in the 10 profiles in Section II. The purpose of this discussion is to draw together the information from the 10 programs concerning costs. While cost analysis was not one of the terms of the proposal that guided the study, considerable information on cost was picked up, incidental to the development of other required information.

Table 40 shows the types of costs that can be incurred in an RP program, by school. Each of these costs will be discussed separately. For the most part the discussion will be concerned exclusively with costs incurred during the school year in which this evaluation was conducted.

Preliminary Planning

With the exception of Richmond and El Cerrito, all of the programs used consultants in the early planning stages of their programs, although the Santa Cruz County programs were the only ones that had costs associated with this service. The Pacific and Cubberley programs were fortunate in having the available services of the technical institute educator. The Ells and De Anza innovators employed no outside consultants although they did solicit the cooperation and assistance of industry in designing their programs.

Teacher Training

The costs associated with training of the current teachers in programs not in their first year of operation could not be reconstructed with any degree of accuracy. In the first-year programs, however (GREAT, SLV Pre-Tech, MDSE, and HOPE) the costs of this training were identifiable. The only reimbursement received by the GREAT team was from their school district which paid $1600 for four teachers for a two-week period of curriculum writing; attendance at a six-week CTE workshop had provided salary increments. In the three Santa Cruz County programs, cost per program of the four-week workshop attended by five teachers and a counselor was $3600.

Released Time for Common Extra Preparation Period

The only school district expense incurred for team meeting time was in GREAT, where the district expended $6,000, and in Santa Cruz County, where the county provided $7,200 per program (equivalent to the released time of one teacher for one year). Some of the other schools had been given released time in the first year of the program.

Student Selection

Insofar as can be determined, none of the schools invested any money in student selection. The selection process was apparently superimposed on the normal load of the RP teachers and one or more of the counselors

Table 40

COSTS OF PRELIMINARY PLANNING AND CURRENT YEAR* OF OPERA

School	Preliminary Planning for Program's First Year of Operation	Training of Current Program Teachers	Released Time of Current Teachers for Common Preparation Period	Evenin with P Student (usuall
Harry Ells PreTech	1961 Rosenberg Grant for planning and initial program design (about $15,000)	6 attended CTE workshop; Ford Foundation funding	n.a.	
De Anza PreTech	1962 Rosenberg Grant for planning and initial program design (about $15,000)	All attended CTE workshop; Ford Foundation funding	n.a.	
Richmond PreTech	n.a.	2 attended CTE workshop; Ford Foundation funding	n.a.	
El Cerrito PreTech	n.a.	1 attended CTE workshop; Ford Foundation funding	n.a.	
Pacific PreTech	1963 Consultant (no cost) 6 week workshop: Ford Foundation funding	3 attended CTE workshop; Ford Foundation funding	n.a.	
Cubberley PreTech	1963 Consultant (no cost) 6 week workshop: Ford Foundation funding	2 attended CTE workshop; Ford Foundation funding	n.a.	
Palo Alto GREAT	1966 Consultant (no cost) 6 week workshop: 4 teachers attended; no funding; salary increments only 2 week workshop: 4 teachers attended; at $40/day; $1600 school district funding		$6000 school district funding	
San Lorenzo Valley PreTech	1966 Consultant: $100 County funding 4 week workshop: 5 teachers, 1 counselor at $30/day; $3600 county funding		$7200 county funding	
San Lorenzo Valley MDSE	1967 Consultant: $100 county funding 4 week workshop: 5 teachers, 1 counselor at $30/day $3600 county funding		$7200 county funding	
Watsonville HOPE	1966 Consultant: $100 county funding 4 week workshop: 5 teachers, 1 counselor at $30/day; $3600 county funding 1966-1967 Released time for planning: $1200 county funding 1967 4 week workshop: 5 teachers, 1 counselor at $30/day; $3600 county funding		$7200 county funding (for after school meetings; no common preparation period scheduled)	

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n.a. = Not applicable

* Refers to year of SRI study

e 40

YEAR* OF OPERATION OF THE TEN RP PROGRAMS

e hers riod	Evening Meetings with Parents for Student Recruitment (usually no $ cost)	Reduction in Class Size (no. of students)		Counselor Costs for Current Year of Operation	Field Trips	Other
		Jr.	Sr.			
	Yes	24	25	--	5	--
	Yes	25	25	--	4	Equipment: $70
	Yes	26	16	--	2	--
	Yes	17	16	--	0	--
	Yes	23	19	Minor reduction of normal load	6	--
	Yes	16	13	Minor reduction of normal load	4	--
strict	Yes	14		--	2	--
nding	Yes	17		Clerical costs of record keeping, evaluation	8	$1000 county funding for articulation with junior college and industry
nding	Yes	20		--	8	$1000 county funding for articulation with junior college and industry
ding ol ommon iod	Yes	30		--	6	$1000 county funding for articulation with junior college and industry

within a school. It was observed in many schools that the selection process was often complicated, tedious, and time-consuming; it was therefore costly to a degree that has not yet been determined. One suspects that the extra time devoted to student selection was paid for out of neglect of other duties of teachers or counselors.

Evening meetings at which the RP programs were explained to the parents and their youngsters were held in every school as part of the standard recruiting procedure. This required the time of all who were able to attend, including members of the teaching team, the counselor or counselors, and some of the administrative staff. Obviously, it is difficult to estimate accurately the cost of this type of activity.

Reduction in Class Size

Class size ranged from 14 students in the GREAT class at Palo Alto High School to 30 students in the HOPE class at Watsonville High School. This represents a sizable variation from the normal class size in most of the schools. There appears to be no reasonable way to estimate the dollar costs associated with such reductions in class size. However, an investment obviously has been made in the RP programs to the extent that class size is reduced.

Counseling Costs

Little investment was made by any of the schools for relieving the counselors of some of their regular duties to enable them to devote more time to the RP program. However, in Pacific and Cubberley there were minor reductions in the load of the counselors to afford this extra time for the RP program. And in several of the schools the counselors worked well beyond the call of duty in order to provide extra time for the RP programs.

Field Trips

All schools except El Cerrito provided field trips for their students. The highest number was at San Lorenzo Valley (PreTech and MDSE). There are two types of costs associated with field trips. The first concerns the planning and supervision of the field trip by teachers or counselors. Well-prepared trips take a considerable amount of planning time, particularly if the field trip is to be geared specifically to a class activity. Also, at least one staff member goes with the students on their field trip. These costs can range from one man-day to one man-week. The other investment is in the direct cost of transportation for the students. The best estimate arrived at is $2.50 per student per field trip.

Other

The only sizable expenditure for costs other than those tabulated appeared in the Santa Cruz County programs where $1,000 per program was allotted by the county to cover costs of articulation with the junior college and industry. The only other miscellaneous costs that could be reconstructed with any accuracy were expended in the De Anza program ($70 for special equipment); source of this funding was the popcorn vending machine.

Other types of costs related to the Richmond Plan are less obvious than those discussed above. One of the most important concerns the extra time devoted by teachers and other staff members to RP programs, particularly in the early years. The teachers' comments suggest that this is an investment of sizable proportions. Although there are no out-of-pocket costs associated with this kind of devoted attention to duty, there may be costs due to neglect of other classes and other duties that the staff members ordinarily perform.

Another cost not usually apparent in most schools is that associated with having visitors come to the school to observe the RP program and talk with the students, teachers, counselors, and administrators. Again to our knowledge, no budget has been set up to account for this activity but considerable time has obviously been devoted to it. Perhaps most schools feel that it is their duty to cooperate with visitors for the betterment of education. Perhaps the reduction in the amount of instruction received by the students is more than compensated by the rewards of having visitors interested enough to come to observe the school.

Summary

In this section of the report the findings have been presented in a comparative context, identifying some of the differences and similarities of the 10 programs. Three broad issues were discussed: (1) effects of the RP programs; (2) awareness of and attitudes toward the programs; and (3) costs.

1. From the personal viewpoints of the current students, some programs are outstanding and some are inadequate. Certain clusters of programs consistently ranked high and others low.

2. Alumni of the RP programs, when contrasted with CG alumni, tended to: have more additional schooling after leaving high school; take technical programs after high school; think their high school was more useful as preparation for further schooling and employment. However, the differences between the RP and CG alumni students were typically small. Analysis by schools was difficult because of small numbers.

   More Parents of RP alumni than CG parents tended to think high school was useful as preparation for post-high school life and that high school produced interest in school. Again, the differences are small.

Generally, the data developed from RP and CG alumni and their parents showed a fairly consistent tendency for the RP, more than CG alumni, to rank higher on many effectiveness criteria.

3. In the simulated pre- and post-experimental program measurements, the RP students tended more often than the CG students to change in directions that would be expected from the RP goals. Additionally, this change for the RP students is very large--over 90 percent positive change in most cases.

4. There was, essentially, no difference between RP and CG students in their reports of having had a say in their education. More CG than RP reported they had a say in classes, while more RP than CG had a say about teacher-student relationship.

5. Only slight differences between RP and CG students exist with respect to how far they expect to go in school (i.e., junior college, four-year college).

6. More RP than CG students improved their grades from the 10th to the 11th or 12th grade.

7. Somewhat more RP than CG students improved their attendance records from the 10th to the 11th or 12th grade.

8. RP teachers uniformly feel that their students were benefiting from the experimental programs.

9. According to the testimony of non-RP-teachers, the RP program had a fairly important and positive effect on other programs within the schools. The major effect was creating an awareness of the need for change. However, there were many teachers who felt the RP programs had the negative effects of creating scheduling problems and removing students from other programs.

10. The RP program resulted, more or less directly, in the introduction of about 5 other RP-type programs in the nine schools.

11. The majority of non-RP students tended to be aware of the RP programs in their schools but knew little about it. The majority thought that the RP programs were successful and about one-fourth were interested in taking an RP course. Most think the RP programs

are designed primarily for vocational ends for students interested in vocational pursuits.

12. Nearly all of the non-RP teachers were aware of the existence of the program. The majority knew a lot about it and thought it successful. About one-third of the teachers expressed an interest in teaching in the RP program. The non-RP teachers viewed the Richmond approach as primarily vocational and tended to think of RP students in terms of their ability, characterizing them mostly as average students.

13. A fairly wide range of types and amounts of cost can be incurred in introducing and operating an RP program. Released time of teachers to allow for an extra common preparation period is the single most expensive factor. However, the costs of a program can vary greatly depending on the unique circumstances within a given school. A highly committed and energetic teaching team can operate with little or no investment.

IV DISCUSSION

Introduction

The preceding sections of this report have dealt with two general issues: (1) detailed histories of what happened in the RP programs in the 10 schools studied; and (2) effects and costs of the program based on analysis of the 10 programs in a comparative framework. This section attempts to interpret these findings in useful and practical terms.

The material in this section is organized in the following major sections:

- Outcomes that can be expected from the Richmond Plan
- Major factors to consider in introducing Richmond Plan
- Administrative guidelines

Outcomes To Be Expected

For the reader who has persisted to this point, the answer to the question "what are the outcomes of these RP programs?" is predictable enough: there can be desirable outcomes or there can be failures. The analysis of the effects by school showed extremely wide variation on several indicators that reflect the effectiveness of the programs. In several schools it is quite clear that the current RP students are highly satisfied with the program. They feel they are deriving benefits from the program and that the promised changes are actually taking place in the classroom. Comparisons of current RP students with their CG counterparts show a fairly consistent tendency for the RP students to get more out of their program. The situation with the alumni of the program is not as persuasive, but RP alumni fare as well as and sometimes better than their CG counterparts.

Viewed as a whole, the weight of evidence is that an RP program that is properly planned, organized, and operated provides substantially improved instructional procedures for average high school students.

The evidence also shows that a Richmond Plan can help create a climate of change in a school. The commitment and enthusiasm of students and teachers participating in an RP program can be infectious. Old ideas and ways of doing things may be re-examined. Additional experimental programs may evolve. Meaningful contact between students and school staff can be re-established.

The question of efficiency of the RP programs considered from the standpoint of outcomes relative to cost now becomes relevant. It would appear that at least two schools, Palo Alto and El Cerrito, decided that the efficiency "index" is too low to warrant continued operation of the programs. At Pacific High School the program has been greatly modified, eliminating many of the elements of the Richmond Plan. On the other hand, there are several RP programs with a long history of stability that appear to be producing consistently good results for their students.

The decision as to whether to seriously consider an RP program depends to a large extent on the seriousness of the problems faced by the average student within a given school. While the investments required to plan and implement an RP program are sizable, the benefits for average students who are drifting, underachieving, and merely "serving out their time" can obviously justify the costs. If the 10 schools included in this evaluation are representative of a large number of high schools in the United States, the question is not whether there are students who could profit from an RP approach to education; a more germane question is how to provide improved instruction to more than the few served by one or two experimental programs.

Major Factors To Consider in Introducing an RP Program

Educators almost always have to make decisions about innovations with incomplete information on optimum planning and implementation procedures. It is useful to highlight the critical factors and problems uniquely associated with the introduction of an RP program. No attempt is made here to duplicate the kinds of advice contained in books on educational administration. The purpose is, rather, to highlight the factors that are more or less unique to an innovation like the Richmond Plan. The RP program requires nearly simultaneous consideration of at least seven major factors, including:

1. Goals. The Richmond Plan focuses on average students, with particular emphasis on those not performing up to their potential. This requires explicit recognition that serious deficiencies exist in the high school.

2. Student Selection. The Richmond Plan requires a new approach to selection. The criteria are complex and the students and their parents must volunteer. The candidate must ordinarily commit himself to the Richmond Plan for at least one year.

3. Group Dynamics. Assembling an experimental class and keeping it together for up to four periods a day can result in unusual demands on the teacher. Different methods of classroom management are sometimes required.

4. Teaching. Several aspects of the teaching process must undergo significant change, including teacher selection and training.

5. Curriculum. The RP curriculum demands special attention. Units must be devised and tested. New standards must be applied to achievement.

6. Counseling. RP programs have survived without change in the counseling function, but the chances of successful operation are enhanced if the counseling function is redefined to include full partnership in the RP teaching team.

7. Reactions of the Faculty. An RP program, since it departs from traditional ways of doing things, can arouse the general faculty. The reactions can be positive or negative.

To complicate the matter of successfully managing several but interrelated factors in a school program at the same time is the requirement that there be fundamental changes in (1) the roles played by students, teachers, and other school staff, (2) the normal mode of school operation, and (3) the relation of the high school with colleges and universities. Additionally, the Richmond Plan has no teaching hardware, nor does it have prepackaged units, certified to be ready for classroom use. There are no formulas for instant success because each school must adopt the Richmond Plan in the light of its unique requirements.

In the following pages the findings of this evaluation are focused on the experiences of the 10 schools as they attempted to embrace this extremely ambitious, complex, and multifaceted innovation. From these experiences will be derived a set of general guidelines.

Goals

The initial change required by adoption of the RP objectives was concerned with the need for providing an alternative program for students whose needs were not being met in any of the traditional programs. This required, first, that the school admitted that the alternatives for the average student were inadequate. In some schools, there was initial dispute regarding the need for such an alternative. A few teachers believed it would be more advantageous to leave these students in College Prep and provide special tutoring; others thought existing vocational offerings might better serve their needs. However, nearly all of the 53 RP teachers at the time of this study were convinced of the need for the Richmond Plan as an alternative.

In some schools, obtaining consensus of specific program objectives had been an initial and continuing problem. At Cubberley, for example, disputes among the teaching team continued for a three-year period before uniformity was attained. Some teachers believed the program should provide specific occupational training. Others argued the concern should be with high school performance only.

Although the occupational objective in the current programs was generally broad and diffuse, it represented a fusing of the academic and the vocational: most of the RP programs had departed from the original emphasis on specific occupational preparation, although in two of the other RP programs (HOPE and GREAT) more specific training was a major goal. Three of the programs placed emphasis on providing a simulated work environment in which cooperative teamwork would foster proper attitudes toward the job world.

Across all schools, basic RP objectives were to reclaim students drifting through high school with little interest or motivation. All of the programs hoped to provide adequate preparation for higher education but major emphasis was on renewed interest and achievement while still in high school.

Student Selection

Any school system adopting an RP program should be aware of the changes required by the nature of the student selection process. Most of the RP teachers and counselors believed it to be critical to program success. All of the programs studied in this research followed the original RP philosophy of selecting average underachieving students. In keeping with the original stress on salvaging College Prep casualties, nearly three-fourths of the RP students in all 10 programs had been in tenth grade College Prep programs; the remainder had been in general, commercial, or vocational courses.

With some minor variations, most of the programs followed the selection criteria established by the innovators, carefully considering sophomore grade point average, IQ, aptitude and achievement test scores, teacher recommendation, and anecdotal data. The PT program also included a requirement for a background in algebra; most had changed from an original criterion measure of "some exposure" to a passing grade of "C" or better. Beyond these criteria, selection was sometimes determined by an indefinable teacher "hunch" that a student was right for the program.

These criteria appear to be generally straightforward; in implementation, however, some of the schools faced enormous problems. In programs where selection was effected through the joint efforts of the counselor(s) and the teaching team, fewer problems were apparent. The evidence strongly suggests that it is essential that the teachers and counselors together select the candidates, with teachers having the final say on program entrance. In schools where this was not occurring, it was the major suggestion for improvement of the selection process.

Despite the care taken in some of the programs by both counselors and teachers to select only those students who would benefit, ambiguity still remained. With a six-year background of perfecting selection criteria, in 1967 the Ells team, for the first time, had to drop a few students from the junior class who had been erroneously selected. At Watsonville High, the HOPE team's planning year included massive detail on selection, but even so, some unqualified students were chosen. The Richmond and El Cerrito counselors tried to replicate the original selection criteria but remained confused as to what they were really looking for in a model RP student. Some thought a student's desire to work with his hands should be a criterion measure; others thought it had little bearing on the subject. Palo Alto's GREAT team, before its project was terminated, was prepared to select only those who expressed interest in entering the program.

A composite picture drawn from teacher statements describes the boy who profits most from a PT program as generally more interested in "things" and how they work, than why. He likes to work with his hands and usually has a good score in mechanical reasoning. He may not be verbally inclined; he is weak in English. He is not accomplishing what he is capable of; in fact, he has probably lost faith in his own ability, but he has a potential for achievement. He is somewhat immature, but intellectually and emotionally able to succeed. Essentially masculine, curious, and imaginative, he longs to do something on his own. Lost and battered by the system, he lacks direction.

Through the years since the program's origin, the major change in the selection process has been the elimination of students with severe behavioral problems. Quite early, the innovating Ells and De Anza teachers found the program could not accommodate the few test cases of chronic discipline problems that had been included. The RP program's other demands on the teaching team precluded the additional problems posed by these students who tended to pull down an entire class. Teachers in the programs that followed in other schools, after having had the same experience, also sought to screen out potentially disruptive students. Experience had taught them to be especially careful to avoid the underachieving student with a high IQ because this combination was indicative of deep underlying emotional problems.

Extreme care was taken in all programs to avoid selecting any student who showed promise of eventually succeeding in the College Prep curriculum. Critics of the RP philosophy posed questions as to the potential danger of taking a student from the College Prep program with a resultant loss of university entrance credits. In one school this problem appeared to be a major concern to the RP students, but this was only one of many grievances and disappointments experienced by most of the RP students at this school, who felt the program had fallen miserably short of the original expectations and promises given to them.

Critics of the Richmond Plan have also debated the wisdom of its required homogeneous grouping of average students as strongly as have other supporters of the notion that heterogeneous ability groupings facilitate learning through identification and exposure to competitive pressures. The Richmond Plan's answer to such critics is found at the very roots of the innovation; its basic premise was that students with a proven inability to compete in the swift-moving College Prep curriculum should be removed from its pressures and placed in a slowed-down program with students of similar abilities and interests. The term "hothouse environment," coined by an RP counselor, aptly describes the new atmosphere created for the under-achieving student. The evidence obtained in this research suggests that until such time as the College Prep curriculum can adjust its pace to meet the needs of all of its students, the RP program is probably a wise alternative, so long as the program is operating effectively.

The voluntary nature of the selection process has always been a significant factor; further, in all programs students were not officially accepted until parental permission had been obtained. Administrative reinforcement is important to the process; most principals attended the typical evening meetings with students and parents to assist in giving a formal presentation of the program. At SLVHS, the superintendent of the school district also attended selection meetings.

It is in the selection process that one of the Richmond Plan's most serious problems--program status--first appears as a significant factor; all of the evidence from this research points to program status as being the largest inhibiting factor to the successful introduction and continued usage of an RP program. The obsession of the American public with the status symbol of the college degree was reflected in student and parental reactions to all of the RP programs studied, although in varying degrees according to the socioeconomic composition of the community. The invidious comparison between College Prep and all other programs resulted in the RP coming out second-rate in all schools; in two schools it was thought to be the primary factor that led to termination of the RP program.

The status problem the RP program in operation would subsequently face was predicted by a quizzical educator attending the first planning workshop in 1961; perhaps if the innovators had foreseen the extent to which that problem would develop, a name other than "PreTech" might have been chosen. "College PreTech" might have elicited a more favorable image in the minds of many who, at the mention of "PreTech," automatically viewed the program as inferior; by its very label it had connotations of a vocational dumping ground for College Prep failures.

Through six years of successful operation the De Anza innovators have managed to overcome most of the status problems that troubled them initially, but each time an RP program was introduced, a certain amount of status resistance was encountered. The El Cerrito attempt was perhaps defeated before it began, the victim of an administrative self-fulfilling prophecy. As predicted, most parents did not accept the idea that their sons were not achieving at the level necessary for university admission and so denied them entrance to an alternative program.

Little evidence was found that any of the programs, in their initial year at least, included a strategy to overcome this status resistance, although both GREAT and HOPE endeavored to minimize the vocational aspects of their programs. SLV PreTech faced a large status problem in its first year but for the most part the students overcame it through deliberate attempts to raise their image with the student body. The SLV teachers regretted that they had not taken measures to inform adequately the faculty and student body of just what the new program was all about. In the program's second year of operation, the SLV team deliberately avoided the use of the word "underachiever" or any similar term that might evoke the image of a program for failures.

Group Dynamics

In the early weeks of a newly formed RP class a significant force starts to emerge that can have both positive and negative effects. The adjustment period of the junior year can be a devastating one for teachers whose style is oriented toward order and firm management of disciplinary problems such as those found in most traditional classrooms. In an RP classroom, chronic inattention, loud talking, excessive movement around the classroom, and personality clashes can frustrate even the most liberal teachers.

Program overselling by advocates not realistic enough about potential problems had left many teachers unprepared for some of their first-year experiences with group behavior. Initially, they were unprepared for the troublesome effects of putting a group of underachieving adolescents together for at least four periods a day. This was especially true in the all-boy RP classes; moreover, as the students became better acquainted, they became increasingly boisterous and less amenable to control by traditional methods. Some teachers spoke of taking tranquilizers for the first time, or of using up all of their energy for the day in one RP classroom. In some schools, a teacher dropped out of the program, unable to cope with the hyperactivity of a junior RP class. However, HOPE, with an all-girl class, and MDSE and GREAT, with coeducational classes, did not experience this problem to any great extent.

Problems of group behavior were generally more significant in programs that ranked lower in effectiveness. In all schools, however, the extent of the problem appeared to be related to other operational factors. Perhaps the most significant factor was the quality of student selection, which in turn was related to the degree of teacher-counselor cooperation in selecting properly qualified students. The teachers who exhibited the most traumatic reactions to problems of group behavior were generally those who were uncommitted to the RP philosophy and who actually preferred teaching the more academically able. These teachers stressed the importance of strong disciplinary techniques in controlling classroom behavior and, in opposition to basic RP philosophy, placed the blame for student failure on lack of ability or motivation.

Whatever their problems in the early years, most of the Ells and De Anza teachers had learned to cope with the group dynamics of their PreTech classes. Having observed the typical junior-senior behavioral change over a six-year period, these teachers stressed the positive effects in building esprit as a motivational factor. San Lorenzo Valley teachers, although they had experienced a large problem initially, also emphasized the importance of the positive effects of group identity and group discipline, expectially in raising the PreTech image with the student body.

Even the most successful RP teachers expressed occasional irritation with the sometimes irrepressible spirits of a PreTech class, but they usually engaged in good-natured repartee with their students and were able to establish classroom control when necessary. As one of them said: "You have to allow more horseplay than you would accept in a normal class....It takes a special kind of discipline....You give them a little more freedom, yet maintain control."

Some teachers admitted that adjusting to often vibrant RP students had meant a radical change in their attitudes and techniques. One said: "It makes you examine what you do in teaching and sometimes you realize that most of what you do is for your own convenience.... Many of the things I had been doing for 15 years were discarded." Another stated he had finally accepted the idea that these students needed a different kind of learning environment, that a certain freedom and release of tension was a prerequisite to effective learning.

Overall, the RP teachers felt that the positive effects resulting from the homogeneous grouping outweighed the negative ones. One thought that the behavioral problems exhibited by the RP underachievers primarily represented a defensive reaction to being exposed after previously having been "hidden in the shadow" of the more able and outspoken highly academic students. For another teacher, it represented a positive reaction to their first feeling of success after being withdrawn from both the social and academic milieu of the high school.

The RP students had ambivalent feelings about being with the same group for several periods a day over a two-year period. The majority appreciated the freedom of expression afforded by this grouping, but complained of the boredom of being with the same students. The major complaint of the PreTech students, however, was lack of a coeducational environment.

Teaching

The most critical factor in the successful evolution of the RP programs appears to be selection of the teaching team. The acid test of the Richmond Plan is the teacher's ability to change and to adapt to the RP philosophy of teaching. The experiment can sustain itself without change in some dimensions, but it cannot persist without the required changes in the teaching role. The most significant are changes in: (1) the traditional belief in the sanctity of subject matter isolation, and (2) teacher commitment to professional autonomy.

In all programs, administrators and staff stressed the importance of selecting teachers on a voluntary basis. The majority of the 53 teachers in the 10 RP programs had volunteered, either requesting participation or willingly agreeing to teach in the program when asked. A few, however, were assigned to the program without having much choice; they were generally found in programs that rated lowest in terms of effectiveness.

Teacher selection appeared to be a high risk enterprise; most administrators were unable to supply definitive information on what to look for when selecting an RP teaching team. One said he searched for teachers who had previously exhibited basic dissatisfaction with traditional curricula. Another thought the most significant characteristic was the ability to close the traditional gap that exists between student and teacher. This, he thought, could be predicted in advance by any discerning administrator.

Only a few of the 53 RP teachers thought that "being a good teacher" was sufficient for successful RP teaching. The majority thought there were unique demands imposed on them by interdisciplinary teaching above and beyond those required by traditional teaching. The most frequently mentioned demands were: (1) flexibility in breaking with tradition and shifting subject matter orientation, (2) interest in working with underachieving students, (3) understanding of, and ability to cope with, the group dynamics of an RP class, and (4) compatability in team relationships. However, in one successful program, the administrator said he had chosen his team members on the basis of diversity of personality with the rationale being that if four divergent personalities could learn to adjust in such an experiment, it would be an effective test of program merit.

Summer workshop training appeared to be critical to program success. Almost all of the teachers in the best programs had such training and agreed that it is essential prior to actual program operation. One of the most significant functions of the workshop appeared to be in breaking down traditional barriers to RP teaching by indoctrination to its philosophies. Here again, the role of the outside consultant assumed major importance in imparting enthusiasm, allaying teacher anxiety, and assisting in program design. Most of the formal curriculum units were formulated at the workshop; some were designed in great detail. In one highly successful program, students were included in writing the curriculum; in another, they appeared to critique the program from a student perspective.

A major complaint relating to workshop training concerned the fact that the program had not been presented realistically. In the attempt to stress the beneficial aspects of the program, some of the more critical problems had not been adequately discussed. Most of the RP teachers had suggestions for improving workshop training, generally centering on the need for more group interaction with teachers from other programs who had experienced actual operational problems. More stress, the teachers thought, should be given to the group dynamics aspects of an RP class and to the difficulties inherent in interrelating subject matter. Some thought it would be desirable to have a one-year training period covering all facets of the program, including classroom observation of successful ongoing programs, with emphasis on significant differences between schools.

Most of the teachers said that on leaving the workshop they were unprepared for the realities that faced them in their first year of the program. Many had no real conception of the amount of time that program participation would require. For all teachers, the time spent in RP preparation per week beyond that spent for their regular classes ranged from one to 10 hours. In addition, teachers in the more successful programs spent a considerable amount of time informally communicating with fellow team members before or after school, or during lunch hours.

Team meetings appear critical to the success of an RP program; their frequency and length of continuance were in some question, however. In two of the Santa Cruz County programs, funding was provided by the county for an extra common preparation period daily; the teams thought this was essential beyond the allotted two-year period. In the Ells and De Anza programs, after six years of operation the teachers still believed in the importance of weekly team meetings and continued to hold them even though a common conference period was not scheduled.

In some of the programs, differences of team philosophy in the program's initial year had established a pattern for the ensuing years. One team's first-year attempts to meet on their own time were marked by differences that discouraged any further continuance; by its third year of operation, no team meetings of any nature were being held. Two of the teams thought it desirable to hold team meetings only when absolutely necessary in order to reduce the possibility of conflict.

The group dynamics of an RP teaching team appear to be as significant as the group dynamics of classes; an interdisciplinary team can be a very fragile set of relationships. Teachers unaccustomed to accommodating their methods to the requirements for change in the many dimensions of an RP experiment are especially vulnerable to anxieties that can result from the attempt to meet all these simultaneous requirements. Not the least of these critical changes is that demanded in adjusting to the new environment of a team situation. One administrator likened the interactions of an RP team to an experiment in "sensitivity training." Teachers spoke of the need for compatibility, emotional stability, and freedom from defensiveness.

A potential major problem lies in teacher turnover. In some of the less successful programs, teachers dropped out in the first year of operation--some were unable to cope with the hyperactivity of an RP class, and others were unable to adjust to any of the program's demands for change. In the more successful programs, teachers who left usually went to advanced positions elsewhere. Here, replacement had not been a problem; other teachers volunteered after having observed the program's development and results. In some schools, teachers were given major responsibility for selecting replacements. However, in one school the transfer of an experienced RP teacher without consultation with the team had caused extreme resentment. The most significant element for minimizing the problem inherent in teacher turnover appears to lie in strong team leadership capable of holding the team together despite these losses.

These potential problem areas with regard to the teaching team were insignificant in the more successful programs where the RP teams appeared to be unified forces working compatibly to resolve their differences and improve their programs. In these programs, the RP teachers felt that even though there were demands in terms of time, energy, and emotion, interdisciplinary teaching was far more challenging and rewarding than traditional teaching. Some of the teacher advantages cited were: development of creativity, expansion of knowledge in other subject areas, strengthening professional expertise, and development of a new awareness of basic educational goals. As one teacher said: "Through the Richmond Plan, we have become more cognizant of the really enormous task it is to educate children; it's easy to lose sight of this in the isolation of the traditional classroom."

Although some of the Richmond Plan's appeal for teachers can be found in its paradoxical combination of dependency on others while still maintaining autonomy, the evidence from all of the programs suggests that its basic appeal to teachers is found in its student-centered philosophy. A long-time superintendent of schools in one of the districts studied described it this way:

> The factor accounting for teacher interest in PreTech is the reawakening of the very real interest in children that originally led some of them into teaching. Through years of repetitious teaching and monotonous classroom experiences, they have lost that original spark. Along comes an innovation like PreTech with its fresh, new approach to learning and they recapture some of that original dedication and enthusiasm.

Curriculum

It is the RP curriculum, with its focus on interrelation of subject matter, fusion of the theoretical with the practical, and instruction at the student's own interest level, that sets the Richmond Plan apart from other school programs. It also creates some major issues that must be dealt with.

A school faced with the task of designing a curriculum is in a position somewhat akin to that of the group that invented the Richmond Plan. There are no "how to do it" manuals or any well-developed and tested curriculum units available, although the CTE distributes a few curriculum units developed by Harry Ells and De Anza high schools

Program design appears to be a paradoxical situation and an area in which there is still some indecision. On the one hand, the innovation's demand for teacher participation in curriculum writing is part of its basic appeal, thought by some to be its most salient feature and the best method for ensuring continuity of teacher interest. One of the original RP teachers said:

> Teachers must contribute to and control the teaching-learning environment....A teacher who is dependent upon and limited to a textbook or a curriculum guide has very little real control over the teaching-learning situation. It is no wonder that both the teacher and the student were uninspired and uninterested in this unfortunate condition....Teachers need an effective voice in writing curriculum. A teacher will teach better and be more satisfied if he participates in this process. The curriculum must be written by teachers who are sensitive to the needs of their students and to the needs of society. Teachers must assume increasing responsibility for the writing of curriculum. It is imperative that the teacher be directly involved in curriculum-making decisions.

It is strongly advised by this school of thought that every time an interdisciplinary program is adopted it must be an original design, and that transplanting a program from one school to another should be avoided at any cost.

On the other hand, however, the lack of prepackaged curriculum units increases the difficulty of adoption and serves to inhibit program introduction in schools where an experimental climate does not exist. There is some thinking that any widespread adoption of the RP program would necessitate the construction of carefully designed curriculum units that could be easily implemented in any program in any school setting. The wide range of teacher competence across many schools may make such routinization mandatory.

Ideally, the solution for curriculum design is in teacher creativity. Evidence from the 10 programs suggests that the most successful RP teachers were also the most highly creative. Under the stimulus of the RP approach it appeared that sources of creativity were tapped that had been lying dormant under the routinized procedures of traditional programs. Teacher suggestions for program improvement included unique ideas for other programs and other curriculum units that might be developed given additional time and funding.

At the present time and given the lack of a "canned" RP curriculum, an interested and committed teaching team must develop its own program. There are no hard and fast restrictions on the amount of planning time required, although one authority recommends a minimum period of two years.

The potential for adapting the RP curriculum to a number of subject areas should be considered. Teachers were found in every program who seemed convinced that the interdisciplinary concept could and should be experimented with at all ability levels. Some thought that high ability academic youngsters would profit from an interrelated College Preparatory curriculum. A third program to be introduced at SLVHS in the fall of 1968 consists of a senior year curriculum of interrelated subjects designed for students who might otherwise drop out of school.

Of special significance to early planning of an occupationally oriented RP program is the establishment of a working relationship with industry. Although the original advisory committee that worked with the innovators did not continue to function as actively as they had originally envisioned, many of the results of that planning remain today in the Ells and De Anza curricula. One of the major regrets of the Pacific team was that there had not been the time nor funding anticipated for visits to industry; this was later thought to be a major lack in their curriculum. The Palo Alto and Cubberley programs, however, did their planning with an actively involved Industrial Advisory Committee functioning both in planning and program operation. Santa Cruz County's overall innovative effort to upgrade and extend vocational education offerings was accomplished through cooperation between industry and education. Industrial Advisory Committees provided guidance to each of the RP programs in Santa Cruz County.

The area in which the innovators were not able to achieve one of their curriculum objectives to any large extent was in articulation with the junior college. Attempts to solicit the cooperation of junior college staff did not succeed. Junior college counselors, unfamiliar with the RP curriculum, often placed early RP graduates in inappropriate courses. One exception, however, is the Santa Cruz County coordinated effort, which assured junior college coordination and cooperation with each of the RP programs there.

The design stage of an RP curriculum has generated enthusiasm in even the most unprogressive and conservative teachers. Given the opportunity, perhaps for the first time, to participate in the original curriculum writing, an RP teacher identifies with his invention to an extent comparable to that of the original innovators. He becomes committed to the innovation and to its usefulness for his students.

This original enthusiasm is almost always tempered by the experience of actually using the curriculum. With the possible exceptions of De Anza and SLV PreTech programs, the attempt to interrelate subject matter was the largest problem area. Even at Ells, most elements of a voluminous curriculum guide were discarded in the first year of operation; Pacific, Cubberley, and Watsonville's HOPE experienced similar problems and were forced to abandon much of their predesigned curricula.

Many of the teachers experienced the shock of discovering that some of their RP students were unprepared for the carefully constructed interrelated units. In the selection process, some unwarranted assumptions had been made as to the level of student ability; homogeneous groupings had not always meant homogeneous abilities. Also, the RP philosophy which dictates that teachers, and not students, are responsible for student failure was a difficult one to adhere to, especially when students were not at the anticipated ability level. Teachers committed to this philosophy experienced severe emotional reactions of defeat and despair at their perceived failure. However, other teachers, not as committed to this philosophy, were punitive toward the RP students, blaming the students and not themselves for the failures.

There were other factors associated with the problem of interrelating subject matter. At some schools the lack of a regularly scheduled common preparation period posed insurmountable difficulties for the team in getting together to plan for interrelationship; common lunch hours did not provide the needed time. Even in HOPE, with the most careful planning over a one-year period and with a committed teaching team, there were large difficulties due to the fact that no common meeting time was scheduled, although the team tried to meet weekly after school.

Given a common preparation period, however, there were still problems basic to interrelationship. With the exception of Ells and De Anza, it appeared that every team had difficulties in its attempt to break with the tradition of subject matter isolation. GREAT, with a common meeting time provided, and with the most natural of subject matter relationships, spent its first six weeks teaching in a traditional isolated lecture method before the team even realized what they were doing. By this time, some of the students had dropped out of the program. The crux of the problem appeared to lie in a team's unrealistic expectations as to the degree of interrelationship that can be effected. What had looked simple on paper in the design stage was exceedingly complex and difficult to implement in actual classroom operation. Teachers expressed feelings of anxiety and guilt about their inability to relate subject matter totally; all testified to the difficulties in this attempt.

The evidence from this study suggests that there is a misconception that complete interrelation of subject matter is effected in other existing programs and therefore must be replicated if an RP curriculum is to be successful. No such complete interrelationship was found to exist in any program although De Anza most closely approaches the ideal. The Ells team, in its first year, lost its anxieties about any failure in this regard and today tends to discount the necessity for struggling to effect complete interrelationship.

Counselors

The role of the Ells counselor as an innovator was in itself a unique departure from the tradition of curriculum reform. He believed the time had come for a redefinition of the counseling function in the American high school; the traditional gap between the classroom teacher and the counselor had to be closed. For the programs that were to follow, he served as a model of the counselor as a full partner in the RP teaching teams. Although none of the counselors in the programs that were studied achieved his original degree of participation, a few approached it.

The counselors most actively concerned with the RP programs were found in the Santa Cruz County schools. Here, innovation in the counseling function was an integral part of the county's overall effort to upgrade the quality of its vocational education offerings and funding was available to support the participation of the counselors as active members of the RP teams. This was a deliberate strategy for it was felt that the counselors had to be sold on the RP idea. Each of the counselors in the three Santa Cruz County programs had been active participants from the early planning stage of the innovation; one, in fact, had been primarily responsible for the idea to introduce an RP program at his school. All had attended the summer curriculum workshops along with their teaching teams, assisting in program design and curriculum writing. This degree of participation meant that from the beginning each of the counselors had a thorough understanding of the RP goals and philosophies.

It is important to emphasize the benefits of this cohesion to the program's operation. Student selection, a critical factor in the RP programs, was less of a problem. Counseling of individual RP students was more effectively handled because of the counselor's understanding of program objectives. Channels of communication between the counselors and the RP teachers were more likely to remain open. In one Santa Cruz County program, the counselor found time for occasional classroom observation.

Clerical details, field trip arrangements, junior college articulation, and coordination with Industrial Advisory Committees were also handled by the Santa Cruz County counselors, thereby relieving the teams of these extra demands in the uncertainty and anxiety of the program's first year. One counselor functioned as the team chairman although he felt this to be over-participation and recommended that an RP teacher assume this role. All viewed one of their major functions to be that of providing objectivity and perspective to a sometimes emotionally distraught teaching team.

This degree of involvement was not easily accomplished by the Santa Cruz County counselors; although the RP program was a special assignment, it represented an addition to their already heavy normal counseling load. Still, they remained committed to the program and continued to provide all possible support to the RP teachers. In a recent workshop, one counselor, substituting for an absent RP teacher, rewrote the physics curriculum for the coming year.

In contrast to the Santa Cruz County programs were those with little counselor participation. In schools where teachers were not included in student selection, there were large problems, and little coordination or even communication between the counselors and teachers. The counselors were seemingly unaware of what actually went on in the program. In one school, students had been counseled into the program with promises of interrelated projects, field trips, and other program benefits that simply did not exist. Interviews with these students reflected the extent of their disillusionment. The students failed to understand why the teachers and the counselors hadn't talked to each other.

The status problem, universal to the RP programs studied, also had its influence on the counseling function; the counselor's traditional commitment to preparing students for university admission sometimes prohibited complete acceptance of the RP program. Across all schools, however, the majority of counselors expressed belief in the need for the RP program.

Evidence from all of the programs suggests that the counseling function is highly significant, if not vital, to the successful operation of an RP program. The optimum arrangement appears to be that of the Santa Cruz County programs: counselors should be included in planning and program design; teachers and counselors together should effect student selection; to the extent possible and feasible, counselors should be working members of an RP team.

Reactions of the Faculty

A potentially difficult area is the attitudes of the general school staff toward the introduction of an RP program. Because it represents such a radical break with tradition, an RP program in any school is subject to misunderstanding and even attack by those committed to maintaining the status quo. Some teachers may actively resist a program that does not preserve the sanctity of subject matter isolation. Unless there is clear understanding of its curriculum content, some may feel that students are being deprived of the benefits of a culturally enriched curriculum (e.g., English teachers tend to resent the exclusion of Shakespeare).

Some departments are apt to feel threatened by the new program; members of the IA staff appeared especially prone to resent students being taken away from their programs. However, on the positive side, there are those academic teachers who may express relief that the silent, hard-to-reach underachievers have been removed from their classrooms.

Administration Guidelines

The foregoing discussion highlights the extreme complexity of the Richmond Plan. Each of the seven aforementioned factors is challenging; taken together they could intimidate the potential adopter. The purpose of stressing the complexity of the Richmond Plan is not, however, to intimidate but rather to stress the requirement for the utmost care by those seriously considering the introduction of a change like the Richmond Plan. The comments that follow are focused on the critical planning factors that must be considered in the introduction of a Richmond Plan.

An RP program can be added without seriously disturbing the system or posing a real threat thereto, provided that adequate steps are taken in advance. It is advisable, if not essential, that any administrator planning to adopt an RP program give careful thought to devising a strategy of introducing the innovation; he should manage the program's introduction through planned techniques of action that will minimize potential problems. Much more than routine administrative support is needed for an experimental program which costs extra money and can make many unusual demands on the existing system. The evidence of this study supports the view of Odell, who argues strongly that it is only the principal who can, on a sustained basis, nurture and protect a major innovation: "There was no other person in any of the schools who appeared to have the power to continue to clear the successive road blocks that arose and that inevitably will in such undertakings."*

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* William R. Odell, Study and Development of Shop-Centered Team Teaching for Potential High School Drop-outs, Technical Report, U.S. Department Office of Education, Stanford University, Stanford, California, September 1967, p. 66. His study included the San Lorenzo Valley PreTech Program.

What should the administration do, beyond providing sound leadership, to enhance the chances of success of an RP program. The following pages suggest guidelines.

Preliminary Planning

Evidence of Need. Make a preliminary assessment of the need for adopting an RP program, including a careful survey of the adequacy of the existing curricula. As one RP administrator said:

> A good starting point may be the development of a philosophy which has as its central concept that the purpose of education is to meet the needs of all students. This may sound trite...but when the needs of students are factually assessed and measured against the educational offerings of most high schools, the shortcomings revealed are so serious that the natural inclination is to sweep the whole mess under the rug for another decade. However, time is running out and secondary education's big stall will no longer be tolerated by many communities; perhaps not even by the nation itself.
>
> The assessment to which I have referred leads one to debunk the myth of the comprehensive high school. This American dream, as magnificent as it was, has not kept its promise to the people. Most high schools are comprehensive only in name, and fall far short of providing programs suitable to the interests and abilities of all students who are enrolled. We need only to examine the actual alternatives available to our students in comprehensive high schools to become fully aware of this situation. I submit that these alternatives are so limited in number that the examination can be conducted within a very short period of time, and with the simplest of research techniques.*

Take a serious look at the performance levels of the student body; ask and get precise answers on the question of limitations in the existing curricula. Develop information on the post-high school performance of students, both in college and in the labor market. Relevant discussions with staff can be beneficial in initiating a climate for change and in introducing an element of dissatisfaction with the status quo.

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* A. Winston Richards, "The Role of the High School Principal," in, Curriculum Programs in Action, Report of Conference, Center for Technological Education, San Francisco State College, 1967, p. 17.

Consideration of Cost.

1. In-service training--summer curriculum workshops for both the teaching team and its counselor. Ideally, these should be on a continuing annual basis, brief ones oftener. The initial workshop should be a minimum of four weeks full-time for the teaching team and its counselor (an average of 6 man-months).

2. Common preparation period equivalent to the released time of one teacher throughout the first two years of the program's operation; ideally, on a continuing basis.

3. Equipment--no dollar estimate is possible, but whatever can be obtained, the better. Generally, the program's stress on inventiveness allows for use of makeshift materials. Most teachers and students, however, think the program would be improved with more and better materials.

4. Field trips--provision of school-sponsored transportation, which is an average of $2.50 per student. Five field trips seem to be a reasonable minimum.

Availability of Funding. Availability of funding to cover costs should be a critical consideration in planning. A preliminary survey of resources available through district, county, state, or federal agencies should be made.

Educational Climate. The degree of academic emphasis within a school milieu can be a critical determinant of program success. Status continues to be a major problem associated with RP operations, exerting an influence on student selection, parental reaction, and faculty receptivity. An administrator whose school (1) is located in a community of high socioeconomic status and (2) has a high enrollment in College Prep programs should probably not give serious consideration to an RP operation without developing a strategy to counteract the serious status problems that are almost certain to emerge.

If a climate of experimentation has already been established, if the faculty and student body are generally receptive to new ideas and new programs, the chances for the successful introduction of an experimental RP program are good. On the other hand, should there be an established pattern of traditional curricula offerings and a conservative faculty committed to maintaining that tradition, the chances are reduced.

Stimulation of Staff Interest. It is important to promote awareness of need for change and stimulate faculty interest in developing new programs to meet this need. The contribution of the outside consultant who has been actively associated with the operation of a successful program cannot be overemphasized.

Dissemination of Information. Effective communication is of major importance. Involvement of the community is recommended. By disseminating adequate and knowledgeable information about the program, parent groups can provide support and assist in creating an atmosphere of interest and receptivity. Press releases announcing the introduction of the program should be thoughtfully and carefully worded, emphasizing that it is built on student strengths and interests, rather than on student weakness and failure.

The participation of the general faculty in recommending students for the program can serve to disseminate proper information about the program as well as to help in assembling a larger pool of eligible candidates. Initial and continuing memorandums to the general staff should solicit support for the new program and include accurate details of the selection criteria. Stimulation of awareness of the need for such a program with details of its curriculum content can serve to reduce the anxiety that students are being deprived of the benefits of other, more prestigious programs.

Implementing the Program

Teacher Selection. Choose from volunteers expressing interest in participation those possessing characteristics predictable of success. Look for (1) basic dissatisfaction with traditional curricula, (2) ability to communicate effectively with students, (3) interest in working with underachievers, and (4) compatibility in working with colleagues.

Training. Teachers should make initial visits to other programs, observe classes, hold detailed discussions with staff. Participation of teachers and counselor in curriculum workshop is essential for (1) breaking down traditional barriers to RP philosophy, (2) developing cohesion, and (3) designing program. Include an outside consultant who has used the program, to stimulate enthusiasm and assist in program design. Stress realistic presentation of major potential problem areas: group behavior, team cohesion, interrelationship of subject matter, time demands on teachers.

Team Meetings. These are essential in the first two years of operation, preferably daily in a scheduled common extra preparation period. It is advisable to continue team meetings indefinitely, although in third year they may be reduced to weekly meetings. The counselor should attend as needed. Give student representatives an opportunity to appear to work out problems.

Teacher Turnover. The team should be given major responsibility in selecting replacements. Unilateral action in selecting RP teaching personnel by the administration can demoralize RP teams.

The Students. It is essential that teachers and counselors cooperate in student selection by (1) establishing selection criteria, and (2) selecting candidates, with teachers having final say. Clear-cut criteria must be developed according to goals and philosophies of the type of program designed. It is advisable to eliminate severe emotional and behavioral problems.

Program entrance should be voluntary with parental approval given. Student participation in program decisions (e.g., curriculum units, field trips, and discipline) can be effective.

Be prepared for vibrant, liberated students. Orthodox techniques of classroom control do not usually succeed. Great understanding, patience, and artfulness are required.

Curriculum.

Program Design. In the design stage, it is essential that the RP team assume responsibility for invention. Stress the importance of developing clear objectives; build in systematic evaluations. Ensure continuity of teacher commitment by periodic formal curriculum revisions.

Adaptability. Be aware of the potential of the Richmond Plan for adaptation to (1) numerous subject areas: aeronautics, business, construction, foods, forestry, graphic arts, health, humanities, and (2) other problem areas e.g., the disadvantaged.

Advisory Committees. Develop in the planning phase a working relationship with industry and community colleges. Programs oriented to specific occupations demand participation of industrial representatives to relate effectively curriculum content to job requirements. Those programs less occupationally oriented will also profit by developing information on industrial needs for basic skills. Articulation with college curricula is critical.

Development of Creativity. Encourage and reward teacher creativity while ensuring practicality of program design. Leave curriculum flexible for adaptation to student needs discovered in actual program operation.

Interrelationship. It is important that RP teachers relate subject matter wherever feasible but equally important to allay teacher anxiety regarding need for complete interrelationship of subject matter. Stress that the major importance is for the team to relate and to communicate effectively with each other and with their students.

Field Trips. These are essential to a sound program. However, if not carefully planned, field trips can be a waste of time for all concerned.

The Counseling Function. Include a counselor as a working member of the teaching team, for designing the program, selecting students, attending the curriculum workshop, and sitting in on team meetings. If possible, reduce the counseling load to provide time for additional demands.

V CONCLUSIONS AND RECOMMENDATIONS

Introduction

The Richmond Plan has diffused rapidly throughout the country since its origin in the early 1960s. This rapid diffusion was accompanied by a large amount of favorable publicity, some of which suggested that the program was extremely successful. However, there was no source of objective information concerning how well the program was working. Therefore, some four years after its origin, Stanford Research Institute undertook to supply this information.

Two major questions have guided the conduct of every phase of this research.

- What are the impacts of the Richmond Plan on its students and on the school?
- What information can be developed that would be useful to schools that are interested in introducing an RP program?

The following conclusions and recommendations are addressed to these two major questions.

Conclusions

1. Evidence of several different types converge to suggest that the Richmond Plan can be effective in meeting the challenge of reclaiming the average and often underachieving student by providing a more meaningful learning experience for him in the last two years of high school.

   a. There are distinct clusters of schools that, by several criteria of effectiveness, are operating effectively and successfully.

   b. In the effective schools it is clear that the students in the experimental programs are highly satisfied with their high school experience and feel they are deriving benefits from it.

   c. Comparisons of RP students with their CG counterparts indicate that RP students exhibit more change in directions expected from exposure to RP instruction.

d. RP graduates fared as well as or better than their CG counterparts in their post-high school careers. After leaving high school, more RP students took technical programs; and more think their high school education was useful as preparation for further schooling and employment.

e. More parents of RP alumni than CG parents think high school was useful as preparation for post-high school life. (The differences between the RP and CG alumni students and parents were typically small--therefore the findings are indicative rather than conclusive.)

f. The impressions of the SRI team, based on their familiarity with the 10 programs, generally support these conclusions.

The weight of the evidence suggests that the Richmond Plan has been successful in some schools. However, it is not equally effective in all schools, nor does it reach all students in a given program. Even in the most effectively operated and apparently most successful programs, not all students profited equally. (There are, apparently, requirements for more heroic remedial measures for certain types of average underachieving students.)

2. An RP program can benefit a school as well as its students by creating a climate that is conducive to further improvement in existing high school programs. The RP programs had important and positive effects on other programs within some schools. The major effect seemed to be creating an awareness of the need for change. The RP programs in the nine schools studied resulted more or less directly in the introduction of several other RP-type programs in these schools. However, there were some teachers who felt that the Richmond Plan had negative effects within their schools, such as creating scheduling problems.

Taken as a whole, the evidence suggests that an RP program that is properly planned, organized, and operated provides a substantially improved educational experience for high school students and can create a climate for further change within a school.

3. The decision to seriously consider an RP program depends to a large extent on whether there is a serious problem with average underachieving students within a given school. Should the problem be of sufficient magnitude, the question of cost becomes relevant. While the investments required to plan and implement the Richmond Plan can be sizable, the benefits for average students who are drifting through high school, merely "serving out their time," can justify the costs.

4. The decision to introduce a Richmond Plan into a school must be regarded as a decision to introduce several changes simultaneously, which can often present difficult problems of planning and implementation. However, the evidence of this study suggests that several schools have been

able to establish and operate Richmond Plans successfully. It is likely that other schools can also successfully introduce RP programs provided that the major obstacles are recognized and sound planning procedures are employed accordingly. The guidelines in Section IV sought to provide information useful in overcoming these obstacles.

5. One of the major problems is the tendency to confer inferior status on non-College Prep high school programs. Most of the 10 RP programs included in this evaluation were confronted with this serious problem, which pervaded nearly every aspect of the RP experiment, haunting even the most diligent and effective teachers and their students.

Another major problem is the drastic break with tradition occasioned by the implementation of the Richmond approach.

a. Administrators must admit that the average student is not being properly served by existing programs.

b. RP teachers must relinquish their traditional commitment to professional autonomy and break down subject matter barriers. They must decide how they relate to other teachers since effective participation in an RP program requires a large amount of interaction that is alien to the orthodox mode of teaching. Teachers must also view students more as partners rather than as passive receptacles for knowledge.

c. Counselors must become more concerned with the instructional process and be willing to work as an active member of a teaching team.

d. Students must learn how to handle in a responsible way the classroom freedom they are given.

All these requisites demand rethinking of a complex set of role definitions and expectations that guide the behavior of school people.

Recommendations

1. One RP program can accommodate a maximum number of 60 students. If the nine schools included in this evaluation are representative of a large number of high schools in the United States, the question is not whether there are students who could benefit from an RP approach to education. A more germane question is how to provide improved instruction to more than the few served by one of the experimental programs. Efforts to improve programs for the average student should be continued and strengthened, including modification of or alternatives to RP-type programs that could accommodate larger numbers of students. Particular attention should be given to

adaptations of the curriculum to the needs of (1) potential dropouts and (2) students who are educationally disadvantaged.

2. The success with which RP programs operate is highly dependent on the commitment and willingness of the teachers in the team. If the teachers are enthusiastic about the program, they can overcome obstacles that would ordinarily be fatal to an experimental program. However, there is undoubtedly a limit to the endurance of such teachers. In the long run there will have to be institutionalized means of sustaining teacher commitment.

3. The data developed in this study clearly show that one of the key elements in a successful Richmond Plan is selection and training of the teaching team. San Francisco State College has embarked on an interesting attempt to train student teachers in the RP approach. It is recommended that the U.S. Office of Education keep informed on this experiment and stimulate its diffusion if warranted.

4. A start has been made in this study toward following up on the alumni of the 10 programs and their comparison group peers. Many important questions are unanswered. The alumni follow-up should be extended on a more rigorous and exhaustive basis, including the improvement of the selection of comparison groups. Such a study is needed to settle the question of whether the RP approach makes any significant difference in the post-high school careers of its graduates.

5. The RP approach has received enormous publicity and has diffused rapidly to schools throughout the United States but there appears to be only fragmentary information concerning the actual types of programs, outside support, objectives and methods, and effectiveness. Of special interest would be the "mortality rate" and the reasons therefor. Information should be developed to answer the kinds of questions posed above.

6. The administrative guidelines suggested in this report are necessarily limited to certain critical aspects of the RP experiment. There may be a need for a comprehensive document that would assist a school from the initial planning stages through the institutionalization of the program. Of particular importance is the development of tested curriculum units that could be adopted on a widespread scale. Using this report as a starting point, a group of educators and experts could formulate such a document within a reasonable period of time.

7. There is a need for some means of collecting, analyzing, and disseminating information about the RP movement. The Center for Technological Education at San Francisco State College has performed this function effectively within the limits of its resources. It is recommended that the U.S. Office of Education investigate the requirements for a national center and the extent to which the CTE satisfies these requirements, and stimulate additional activity if deemed feasible. [The close relation between the Richmond approach and certain elements of the ES-70 (Educational System for the Seventies, a U.S. Office of Education program) suggest common requirements that might be combined.]

Appendix A

SURVEY SPECIFICATIONS

Appendix A

SURVEY SPECIFICATIONS

Introduction

The aim of this Appendix is to provide supplementary materials on the several surveys conducted in this study, but not covered in the body of the report. Three things seem important in this respect:

1. The sampling plan.
2. The number of completed survey forms, as a percent of the total sample.
3. Comments on unusual features of the surveys (e.g., low percent of response).

Seven surveys will be discussed:

- RP and CG
- General student body (RP)
- General teacher (non-RP)
- Alumni (both RP and CG)
- Parents (both RP and CG)
- Teachers, counselors, and administrators
- Classroom observation

Richmond Plan and Comparison Group Surveys

Attempts were made to obtain a completed questionnaire from every student in both of these groups. The numbers of students involved and the response rate are given in Table A-1.

Table A-1

TABULATION OF STUDENTS QUESTIONED AND RESPONSE RATE

School	Richmond Plan			Comparison Group		
	Number Enrolled	Number Completed	Percent Completed	Number Selected	Number Completed	Percent Completed
Ells	49	49	100%	87	53	61%
De Anza	50	50	100	151	100	66
Richmond	44	42	95	159	83	52
El Cerrito	33	27	82	92	74	80
Pacific	42	42	100	78	70	90
Cubberley	29	27	93	52	25	44
Palo Alto	14	14	100	57	23	40
San Lorenzo Valley PT	17	16	94	21	18	86
San Lorenzo Valley MDSE	20	17	85			
Watsonville	30	27	90			

There was nearly 100 percent response for the RP students. However, the rate is much lower for the CG students, ranging from 40 percent at Palo Alto to 90 percent at Pacific. The relatively low rate of response is due to the difficulty of assembling all CG students from every corner of the school in one place during the final week of the school year. There were many unintentional breakdowns in communications within the school that made it impossible to contact many students. See Attachments 1 and 2 for the questions that were asked.

General Student Body Questionnaire Survey

As indicated in the introduction to this report, a survey was made of the general student body in the schools in which the experimental programs were operated, excluding RP students. The figures in Table A-2 show the number of students selected to fill out the questionnaires, the numbers completed, the method used for selecting the sample, and the percentage of response rate. As indicated in Table A-2, the response rate varies from 37 percent at Palo Alto to 85 percent at Harry Ells. This wide variation is accounted for by the fact that the surveys were conducted near the end of the school year in order to capture as much of the experience of the general student body with the RP program as possible. However, by waiting until the end of the school year the surveys were conducted in the confusion that is inevitable at this time. Undoubtedly the low response rates of some of the schools are attributable to this fact. See Attachment 3 for the questions that were asked.

Table A-2

GENERAL STUDENT BODY (NON-RP) SURVEY

School	Total No. Selected	Total No. Responded	Sampling Method	Percent Response
Ells	453	384	1/4 Sample Govt and Eng class	84.8%
De Anza	530	412	1/4 Sample Govt and Eng class	77.7
Richmond	622	366	1/4 Sample Gym class	58.8
El Cerrito	427	213	1/4 Sample Gym class	49.9
Pacific	1,150	697	All Gym classes	60.6
Cubberley	1,200	377	All Eng classes (Total student body)	31.4
Palo Alto	1,450	541	Distributed at year end assembly	37.3
San Lorenzo Valley PT	632	475	All classes at same period	75.2
San Lorenzo Valley MDSE	632	329	All classes at same period	52.1
Watsonville	800	451	1/4 Sample advisory groups	56.4

General Non-Richmond Plan Teacher Questionnaire Survey

A questionnaire similar to that given the general student body was also given to the entire non-RP faculty at each school. Table A-3 shows the number of teachers sampled, the number completing the questionnaire, and the percentage of response. These figures show an average response of around 50 percent. It is difficult to explain this relatively low response rate on the part of these teachers. They were believed to be extremely interested in the experimental programs operating within their schools. Again, this questionnaire was distributed as near as possible to the end of the school year. This may have resulted in lowering the response rate significantly because of the many additional duties placed on teachers at this time. Additionally, many of them may have been leaving for vacations or summer workshops immediately after the end of school. See Attachment 4 for the questions that were asked.

Table A-3

GENERAL NON-RP TEACHER SURVEY

School	Number Selected	Number Completed	Percent Completed
Ells	81	32	40%
De Anza	85	54	63
Richmond	118	54	46
El Cerrito	70	29	41
Pacific	62	34	55
Cubberley	80	44	55
Palo Alto	91	47	52
San Lorenzo Valley PT	30	21	70
San Lorenzo Valley MDSE	30	18	60
Watsonville	120	65	54

Alumni (Both Richmond Plan and Comparison Groups) Survey

A telephone survey was conducted of all alumni of the RPs and their CG counterparts. The actual telephoning was done by Field Research Inc. of San Francisco. The results for both the RP and CG Alumni are in Table A-4. See Attachment 5 for the questions that were asked.

Table A-4

TELEPHONE SURVEY OF RP AND CG ALUMNI

	Alumni Interviews	
	No.	%
Attempts made	221	100%
No contact made	199	55
In the service, not living in Bay Area	138	38
Not home	43	19
Parent didn't have phone no. or address	9	4
Parent refused information	5	2
No phone	2	1
In the hospital	2	1
Contact made	160	72
Refused	2	1
Interview completed	158	71

The response rate has been computed without the alumni that were in the armed services and therefore unavailable for interviewing. Time prohibited follow-up of servicemen by mail.

Parent Survey

The parents of all alumni were subjects of a telephone interview. This survey also included parents of the "current" students (i.e., parents of students who were seniors during the school year 1966-67), as shown in Table A-5. The column for recent graduates refers to the seniors who graduated in June 1967. This group had attained alumni status at the time of the telephone survey in the spring of 1968, but were treated separately for purposes of analysis. See Attachment 6 for the questions that were asked.

Table A-5

TELEPHONE SURVEY OF ALUMNI AND CURRENT PARENTS

	Total Parents		Parents of Alumni		Parents of Recent Graduates		Parents of Current Seniors	
Total names supplied	1,071		578		214		279	
	No.	%	No.	%	No.	%	No.	%
No contact made	294	27%	192	33%	56	26%	46	16%
No answer, not home	115	11	65	11	29	14	21	8
Disconnect	162	15	123	21	14	7	25	9
Toll call	17	2	4	1	13	6	--	--
Contact made	777	73	386	67	158	74	233	84
Refusal	48	5	27	5	5	3	16	6
Interview completed	729	68	359	62	153	71	217	78

Personal Interview Survey of Richmond Plan Teachers, Counselors, and Administrators

Introduction

Intensive interviews were conducted with teachers, counselors, and administrators directly concerned with the 10 RP programs. These were all tape-recorded and transcribed. In all, 53 teachers, 20 counselors, and 18 administrators were interviewed. The material that follows covers the questions or interview guides that were used in these interviews. Where used for all three, "T,C,A" is noted after the item, and where used only with one or two categories a similar notation system is used.

Interview Guides Used for Teachers, Counselors, and Administrators (TCA)*

1. Origin of the Program

Were you here when the PT program was first introduced? (T,C,A)

Do you recall how you first heard about the PT program?
When?
What did you hear about it? (T,C,A)

Do you recall the steps taken to introduce the PT program here?
Were there factors making it difficult to introduce PT here?
Administrative, faculty, students, other? (T,C,A)

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* PT refers to Richmond Plan.

Were there factors that helped in introducing PT here? Administrative, faculty, students, other? (T,C,A)

What were the major objectives of the PT program in its first year of operation?
(1) Short range (for students still in school)
(2) Long range (for students after graduation) (T,C,A)

Have these objectives changed during the time the program has been in operation?
(1) Short range
(2) Long range (T,C,A)

2. Operation of the Program

a. The Students

Who is responsible for the selection of PT students here?
- How is it done?
- Can you suggest any changes or improvements in the selection process?
- What are the reasons given for rejection of invitations to enroll in PT?
  (1) By boys?
  (2) By their parents? (T,C,A)

What personal characteristics do you look for in a boy whom you would recommend for the PT program?
- Does he differ in any significant ways from your average College Prep boy?
- From your other students? (T,C,A)

Do you have College Prep or other students besides your PT students?
(If yes for CP) Does your work with PT students differ from your work with CP students?
(If yes) In what ways?
(If yes for other, repeat above) (T)

As compared to your College Prep students, how well do you feel you know your PT students?
As compared to other students? (T,C,A)

Apart from other aspects of PT, are there any specific effects that result from all PT boys being together for most of the day? Positive
Negative (T,C,A)

People speak of significant change in boys who pass from the eleventh to the twelfth grade.

- How would you describe this change?
- Would you say that the amount of this change is greater, less, or about the same for PT boys as for other boys? (T,C,A)

b. The Teaching Team

How have teachers become participants in the PT program? What problems have been associated with staffing the program? (A)

To what extent are you satisfied with teacher performance throughout the life of the PT program? (A)

Have there been particular
Strengths?
Weaknesses? (A)

Were you involved in any way in the preparation or training of teachers for PT?
(If yes) Please describe. In what ways, if any, was this preparation helpful, in your judgment? Could you suggest ways in which the preparation could be improved?
(If no) Do you think you should have been involved? What would you include in such preparations? (A)

Did you request a PT teaching assignment?
(If yes) a. What were your major reasons for wanting to teach in the PT program?
(If no) b. How did it come about? Would you say you volunteered, or were assigned, or was it a combination of both?
c. How did you feel about this? (T)

Did you receive any preparation or training for teaching PT prior to actually teaching in the program?
(If yes) a. What kind? How much? Were you reimbursed for your time?
What were the advantages? How could it have been improved?
(If no) b. Do you feel you should have received training? What should have been included? (T)

Have you received any kind of training since you began teaching in the PT program?
(If yes) a. Describe as in part "a" of the preceding question. (T)

Are there unique characteristics needed by successful PT teachers?

- What is the single most important characteristic? (T,C,A)

You teach both Jr. and Sr. PT classes. Are there advantages--disadvantages? (T)

How would you compare working as a member of a teaching team with working alone in traditional teaching?

- What are the advantages?
- What are the disadvantages? (T)

c. The Counselors

Did you receive any preparation or training for counseling PT students prior to working with them?
(If yes) Please describe. In what ways, if any, was this preparation or training helpful to you? Could you suggest ways in which the preparation or training could be improved?
(If no) Do you think you should have received preparation? What would you include in such preparation? (C)

Aside from the selection process, in what ways are you involved in the PT program? (C)

Do you spend more time, less time, or about the same time counseling individual College Prep students?

- (If more or less) Please give the reasons for this difference. (C)

Does your counseling with PT students differ in any other ways from your counseling with College Prep students?
(If yes) In what ways?

- From your counseling with terminal students?
  (If yes) In what ways? (C)

What are the most common frequent problems PT students discuss with you? (C)

What are the reasons given for boys dropping out of the PT program?

- By the boys?
- By their parents? (C)

Do you provide any information about college for your PT students?
(If yes) What kind?
Do you provide college information for your College Prep students?
(If yes) What kind?

For your other students?
(If yes) What kind?
Do any students get additional information elsewhere in the school? (C)

Do you provide occupational information for your PT students?
(If yes) What kind?
Do you provide occupational information for your College Prep students?
(If yes) What kind?
For your other students?
(If yes) What kind?
Do any students get additional information elsewhere in the school? (C)

Forgetting about selection, to what extent are counselors involved in the PT program? (T,A)

How important is the contribution that counselors now make?
- Is it very important, important, or not at all important?
- How do counselors tend to view the program? (T,A)

d. The Curriculum

Do you have College Prep or other students besides your RP students?
(If yes for CP) Does your work with PT students differ from your work with CP students?
(If yes) In what ways?
(If yes for other, repeat above) (T)

Do you provide any information about college as a part of regular class work? For PT
CP
Other students
How? Outside speakers, classroom discussion.
Other? (T)

Do you provide any occupational information as part of the regular class work? For PT
CP
Other students
How? Outside speakers, classroom discussion. (T)
Other?

Are grading procedures for PT students easier, harder, or about the same for College Prep students?
For other students? (T,C,A)

People speak of the interrelationship of courses, how important do you think this interrelationship really is? (T,C,A)

- To what extent do you relate your subject matter to other PT classes? (T)
- Do you think there could be more relationship? (If yes) In what ways? (T,C,A)

Are PT team meetings held here?

- How often?
- When? Is a common conference period given?
- What things are discussed in these meetings?
- What proportion of total time is spent in discussing individual students?

(If no) Do you believe they would be of benefit?
(If yes) What should be discussed in these team meetings?

How often, per week, do you informally communicate about PT (program and students) with each of your fellow PT teachers? (T)

Do you ever take part in PT team meetings?
(If yes) What things are discussed at these meetings?
(If no) Do you think it would have been helpful if you had? (A,C)

Apart from formal PT team meetings, how often, per week, do you communicate with each PT teacher about students or any other aspect of the PT program? (A,C)

Of all the features of the PT program, what do you think are the most important in motivating students?
What is the most important single feature? (T,C,A)

e. The Administration

Does your administration support PT?

- In what ways?
- How does the degree of administrative support affect the team?
- Are there additional ways in which you think your administration could support PT? (T,C)

In what ways are you involved with the PT program?
What are the most important contributions you feel you make to the PT program?
(If more than one) What is the single most important contribution?

In your view, what is the greatest problem posed by the PT program?
Are there other problems? (A)

Are there any extra costs associated with the PT program here?
(If yes) What are they?
How are they funded? (T,C,A)

3. Impacts of the Program

What benefits, if any, accrue to the boys as a result of being in PT?
(If more than one) What is the single most important benefit?

What disadvantages, if any, are there for the boys as a result of being in PT?
(If more than one) What is the single most important disadvantage? (T,C,A)

What effects, if any, do you think PT has had on
(1) Other programs?
(2) Other teachers? How do they view the program?
(3) Other students? How do they view the program?
(4) Parents:
    PT--How do they view the program?
    Other--How do they view the program?

Has the community been involved in PT in any ways? Service clubs? Industry? Jr. College? Jr. High? Other? (T,C,A)

If you were to leave PT, do you think your teaching would be affected in any way by your PT experience?
(1) In what way? (T)

4. The Future

Do you anticipate that the PT program will be continued here?
(If no) Why not? (T,C,A)

Do you anticipate that interdisciplinary team teaching will be expanded here?
(If yes) In what ways? (T,C,A)

In your view, what effects would there be if the PT program were discontinued here? (T,C,A)

Are you personally enthusiastic about your participation in the program?
(Yes or no) What reasons? (T,C,A)

Assuming the program continues as it is, would you choose to continue teaching in it?
(If yes) For how long? (T)

Given a reasonably unlimited amount of time and funds, what changes would you make in PT? (T,C,A)

Classroom Observation

Classroom observations were made in all RP programs. We strived for a minimum of two weeks observation of all classes in each program (one week each for the junior and senior class, if any). At Watsonville and San Lorenzo Valley MDSE we were able to observe for only two days. The one-week minimum was greatly exceeded at Harry Ells and De Anza.

The observation was guided by a form that was mainly useful in writing up the notes. The major topics covered included: (1) teacher's attitude toward his class and his teaching team, (2) teacher's approach to his curriculum, with particular attention to use of RP doctrine, (3) student attitudes toward his teacher, his peers, and his RP program, and (4) general climate of the class (e.g., cooperative, active, enthusiastic).

Appendix A, Attachment 1

RICHMOND PLAN AND COMPARISON GROUP QUESTIONNAIRE

Attachment 1

RICHMOND PLAN AND COMPARISON GROUP QUESTIONNAIRE

1. In what year of school are you? (Check list: 11th, 12th)

2. In what program are you now enrolled? (Check list: Commercial, General, PreTech, Vocational, College Preparatory)

3. In what program were you enrolled as a 10th grader? (Check list: Commercial, General, Vocational, College Preparatory)

4. If you changed programs: What was the main reason why you changed programs? (Open end)

5. In general, how difficult has your course of study been this semester? (Check list: Extremely difficult, Fairly difficult, Rather easy, Very easy)

6. During this past school year, approximately how many hours per week did you spend in school activities? (athletics, school government, social clubs, etc.) (Check list: none, 1-5, 6-10, 11-15, 16-20, 21 or more)

7a. During this past semester did you work for pay outside your home? If yes, how many hours per week did you work for pay outside your home? (Check list: less than 6, 6-10, 11-15, 16-20, 21-25, 26-39, Full-time--40 hours or more)

8a. Thinking back now, have your feelings toward your studies changed in any ways since the first semester of 10th grade? If yes, in what ways have your feelings changed? (Open end)

9. When you were in the first semester of 10th grade, how did you feel about each of the following things? Please check the one choice under each question which best fits how you felt then.

IN THE FIRST SEMESTER OF THE 10TH GRADE:

How did you feel about school? (Check list: Very unhappy; I wanted to quit; Somewhat unhappy, but I wanted to finish; Didn't care; I was just drifting; Enjoyed it a little; Enjoyed it very much)
How much confidence did you have in yourself? (Check list: A lot of confidence; Some confidence; Very little confidence; No confidence)
How difficult was it to get high grades? (Check list: Extremely hard; Fairly hard; Rather easy; Very easy)

How good a student did you try to be? (Check list: Top of my class; Above the middle of my class; In the middle of my class; Just good enough to get by)
How much relation did your school work seem to have to your future? (Check list: A lot of relation; Some relation; Very little relation; No relation at all)
How often did your teachers try to relate your courses to each other? (Check list: All of the time; Most of the time; Some of the time; None of the time)

AS A STUDENT IN THE FIRST SEMESTER OF 10TH GRADE:

I studied: (Check list: Very hard; Fairly hard; A little; Not at all)
I spoke out in most of my classes: (Check list: Very often; Fairly often; A little; Not at all)
I received individual help, if I needed it, from: (Check list: All of my teachers; Most of my teachers; A few of my teachers; None of my teachers)
I felt that most of my teachers were: (Check list: Very interested in me; Fairly interested in me; Not interested in me; Rather uninterested in me; Didn't care at all about me)
I felt that Mathematics as a subject was: (Check list: Highly enjoyable; Fairly enjoyable; Rather unpleasant; Very unpleasant)
I felt that English as a subject was: (Check list: Highly enjoyable; Fairly enjoyable; Rather unpleasant; Very unpleasant)

10a. Do you think that students should have a say about how things are done in their high school programs?
If yes: What are the things in their high school programs that students should have some say about? (Open end)

11a. Have you had a chance in the last school year to have a say about any part of your education?
If yes: What were the things you had a say about? (Open end)

12. Now we'd like to know how you feel this semester about each of the following things. Please check the one choice under each question which best fits how you feel now. (Repeat Q. 9)

13. Sometimes things happen that are so special you remember them for a long time. Can you tell us one thing that happened in high school that was really great--something that seemed to make all of your education more important to you personally? (Open end)

14. Now tell us one thing that happened in high school that really bothered you--something that made it harder for you to learn or made you unhappy about school. (Open end)

15. How far do you expect to go in school? (Check one)

I don't expect to finish high school.
I expect to finish high school, but not go any further.
I expect to go to business, technical, or vocational school.

I expect to get a junior college degree.
I expect to get a 4-year college degree.
I expect to go to graduate school after I get a 4-year college degree.
I expect to go to some other kind of school after high school (write in what kind):

16. IF YOU PLAN TO GO TO ANY SCHOOL AFTER YOU FINISH HIGH SCHOOL: Which one of the following programs do you expect to be in? (Check list: Agriculture, Biological Sciences, Business-Commercial, Education, Engineering, English or Journalism, Foreign Languages, Industrial Arts, Mathematics, Music-Art, Physical Education, Physical Sciences, Psychology or Sociology, Technical, Other, Undecided)

17. IF YOU DO NOT PLAN TO GO TO ANY SCHOOL AFTER HIGH SCHOOL: What do you plan to do after you leave high school? (Check list: Go into the military service; Go to work; Other)

18. Do your parents want you to go to college? (Check list: They insist on it; They want me to go very much; They want me to do whatever I want; I think they want me to go but we don't talk about it; They don't care one way or the other; No, they don't want me to go)

19. Do you know yet what kind of work you expect to do most of you life after you have completed your schooling?
If yes: What kind of work will it be?

Appendix A, Attachment 2

RICHMOND PLAN QUESTIONNAIRE

Attachment 2

RICHMOND PLAN QUESTIONNAIRE

1. Please think back to the time when you were first thinking about entering the PreTech program. At that time, how did you expect the PreTech program would differ from the program you were in during 10th grade? (Open end)

2a. Has the PreTech program been what you expected it would be?
If no: In what ways has it not been what you expected it would be? (Open end)

3a. Are there any really good things in your PreTech program compared to the program you were in as a sophomore?
If yes: What is the one best thing? (Open end)

4a. Are there any things that you especially dislike about your PreTech program compared to the program you were in as a sophomore?
If yes: What is the one thing you dislike the most? (Open end)

5. Why is the PreTech program for boys only? (Open end)

6. How do you feel about being in an all-boy class for most of the day? (CHECK ONE OR BOTH AND COMPLETE THE SENTENCE: I like it because: I dislike it because:)

7a. Do your PreTech teachers do things any differently than teachers in regular high school classes?
If yes: What things do they do that are different? (Open end)

8. Of the courses you are taking this semester, which do you enjoy the most? (Course name) What is there about this course that you enjoy? (Open end)

9. Of the courses you are taking this semester, which do you enjoy the least? (Course name) What is there about this course that you dislike? (Open end)

10. How many students not in the PreTech program know about the PreTech program at this school? (Check list: Most know about it; Some know about it; A few know about it; Hardly anybody knows about it)

a. How much do they know about the PreTech program at this school? (Check list: A lot about it; Some things about it; Very little)

11. On the whole, how do the students who know about it seem to feel about the PreTech program? (Check list: Very favorably; Somewhat favorably; Rather unfavorably; Very unfavorably)

12. What kinds of things do students not in the PreTech program say about the PreTech program? (Open end)

13. How do your parents feel about the PreTech program? (Check list: They like the program because [Open end]; They dislike the program because [Open end]; They don't care one way or the other)

14a. Has your PreTech class been observed by visitors this school year? (Do not count guest speakers and Stanford Research Institute staff)
If yes:
b. About how many times have there been visitors this school year? (Check list: 1-3 times; 4-9 times; 10-19 times; 20 or more times)
c. How do you feel about being observed? (Check list: I like it; I don't mind; I dislike it)
d. Why do you think people are interested in observing the PreTech program? (Open end)

Technical-type high school programs are planned to be of benefit to students in a number of different ways. We are most interested in knowing whether you think your PreTech program has helped you personally. We need to know exactly what it has done for you--or--what is has not done for you. Only by getting this information from you can we learn how programs for other PreTech students can be improved. Please think back now very carefully through all your experiences in the PreTech program as you answer the following questions:

15a. Has the PreTech program done anything for you personally?
If yes:
b. What are the two most important things it has done for you in terms of your work while still a student at this school? (Open end)
c. What are the two most important things it has done for you in terms of your future after graduation from high school? (Open end)

16. Name the one boy in your PreTech class who got the most out of the PreTech program.

17. Name the one boy in your PreTech class who got the least out of the PreTech program.

18. Name the one boy in your PreTech class you like the most.

19. Thinking back again through all of your experiences in the PreTech program, how do you feel about it? (Check list: Very satisfied with it; Fairly satisfied with it; Not very satisfied with it; Very dissatisfied with it)

20. If you had it to do over again would you take the PreTech program?
If no: Why wouldn't you take the PreTech program again? (Open end)

21. How would you improve the PreTech program? (Open end)

22. Please add here any additional comments or suggestions you would like to make:

Appendix A, Attachment 3

STUDENT BODY QUESTIONNAIRE

Attachment 3

STUDENT BODY QUESTIONNAIRE

FIRST, just a few questions about yourself:

1. Check one: (Check list: Male, Female)

2. Check one: (Check list: Freshman, Sophomore, Junior, Senior)

3. In what program are you now enrolled? (Check list: Commercial; General; SLIIP, GREAT; Vocational; College Prep; Other [please fill in])

SECOND, a few questions about the program.

4. Are you aware of the program here at your high school? (Check list: I know a lot about it; I know some things about it; I know a little about it; I know practically nothing about it)

PLEASE ANSWER QUESTIONS 5b and 5c EVEN IF YOU DON'T FEEL FULLY INFORMED ABOUT THE PROGRAM.

5b. What is the program supposed to do for its students? (Open end)

5c. What type of student is in the program? (Open end)

6. In your opinion, how successful has the program been at your school? (Check list: Very successful; Somewhat successful; Rather unsuccessful; Very unsuccessful)

7a. Have you ever been in the program at this school? If Yes: Why did you leave the program? (Open end)

8a. Have you ever considered entering the program at this school? If Yes: Why did you decide not to enter the program? (Open end)

9. If asked, would you be interested in entering the program? (CHECK ONE OR BOTH AND COMPLETE THE SENTENCE)
   Yes, I would be interested because:
   No, I would not be interested because:

Appendix A, Attachment 4

FACULTY QUESTIONNAIRE

Attachment 4

GENERAL FACULTY QUESTIONNAIRE

1. For how many years have you been teaching? (Check list: Less than 5; 6-10; 11-20; 21 or more)

2. Your age? (Check list: 20-30; 31-40; 41-50; 51-60; 61 or more)

3. To what department are you assigned?

4. Check one: (Check list: Male; Female)

5. Are you aware of the program here at your high school? (Check list: Yes; No--RETURN QUESTIONNAIRE IN ATTACHED ENVELOPE)

6a. How much do you know about the program here at your high school? (Check list: I know a lot about it; I know some things about it; I know a little about it; I know practically nothing about it)

PLEASE ANSWER QUESTIONS 6b and 6c EVEN IF YOU DON'T FEEL FULLY INFORMED ABOUT THE PROGRAM.

6b. To the best of your knowledge, what is the program supposed to do for its students? (Open end)

6c. To the best of your knowledge, what type of student is in the program? (Open end)

7. In your opinion, how successful has the program been at this school? (Check list: Very successful; Somewhat successful; Rather unsuccessful; Very unsuccessful.)

8a. Have you ever taught in the program here at this school? If yes: Why did you stop teaching in the program? (Open end)

9a. Have you ever been asked to teach in the program in this school? If yes: Why didn't you choose to teach in the program? (Open end)

10. If asked, would you be interested in teaching in the program? CHECK ONE OR BOTH AND COMPLETE THE SENTENCE(S): I would be interested because (Open end); I would not be interested because (Open end)

11a. Has the program had any effects on other programs here at this school? If yes: Please describe these effects (Open end)

12a. Have you had any students in your classes this school year? If yes: In your opinion, how do they compare with other students in your classes? (Open end)

Appendix A, Attachement 5

ALUMNI INTERVIEW

Attachment 5

ALUMNI INTERVIEW

Have you had any additional schooling since you left high school?

If yes: What type of additional schooling have you had since leaving high school; have you gone to a junior college, a 4-year college or university, or some other type of trade or extension school?

How useful do you feel your high school education has been in preparing you for this schooling? Extremely useful, Very useful, Somewhat useful, Not at all useful.

(If Extremely, Very, or Somewhat useful: In what specific ways do you feel it has been useful?)

(If Not very or Not at all useful: Why do you feel that it has not been useful?)

Have you held any full-time jobs since attending high school?

(If yes: Name of company, Length of time employed, Type of work)

How useful do you feel your high school education has been in preparing you for this (these) job(s)? Would you say it has been Extremely useful, Very useful, Somewhat useful, Not very useful, Not useful at all?

(If Extremely, Very or Somewhat useful: In what specific ways do you feel it has been useful?)

(If Not very or Not at all useful: Why do you feel that it has not been useful?)

Have you served in the Armed Forces since leaving high school?

What are you now doing, that is, are you going to school, working full or part-time, or what?

What are your plans as far as future education? (If in school now) . . . How far do you expect to go in school?

(If not in school now) . . . Do you plan to continue your schooling or not? How far do you expect to go in school?

Expect to go to Business, Technical, or Vocational school
Expect to get a junior college degree
Expect to get a 4-year college degree

Expect to get a graduate degree after I get a 4-year college degree
Expect to go to some other kind of school after high school
Don't expect to get any more schooling

What are your plans for a career . . . what type of work do you think you will be doing in 10 or 15 years from now?

Appendix A, Attachment 6

PARENT INTERVIEW

Attachment 6

PARENT INTERVIEW

Current Parent - How useful do you feel his high school education will be to him when he graduates?

Alumni Parent - How useful do you feel his high school education has been to your son since he graduated? (Check list: Extremely useful; Very useful; Somewhat useful; Not very useful; Not at all useful.)

(If Extremely, Very, or Somewhat useful: In what specific ways do you feel it has been useful to him since he graduated?)

(If Not very or Not at all useful: Why do you feel that his high school education has not been useful to him?)

The following questions were asked only of parents of graduates:

> What is your son doing now, that is, is he going to school, working, or in the service? (Check list: Going to school; Working full time; Working part time; In the service; Other.)

Appendix B

DETAILED TABULATIONS

Table B-1

SELECTED CHARACTERISTICS OF RP AND CG STUDENTS

		Cubber-ley*		Palo Alto*		De Anza		El Cerrito		Harry Ells		Richmond		Pacific		SLV PreTech		SLV MDSE*		Watson-ville HOPE*	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
10th Grade Program†																					
Commercial	RP	--	--	--	--	1	2.0	--	--	--	--	1	2.5	--	--	--	--	--	--	4	14.8
	CG	1	4.0	--	--	12	2.0	2	2.7	--	--	4	4.8	2	2.9	1	5.6	--	--	--	--
General	RP	22	81.5	12	85.7	8	16.0	1	3.7	3	6.1	6	14.3	9	21.4	9	56.3	8	47.1	6	22.2
	CG	11	44.0	15	65.2	16	16.0	11	14.9	7	13.2	11	13.3	13	18.4	9	50.0	--	--	--	--
Vocational	RP	--	--	--	--	1	2.0	1	3.7	2	4.1	--	--	1	2.4	--	--	--	--	--	--
	CG	--	--	--	--	5	5.0	--	--	2	3.8	2	2.4	2	2.9	--	--	--	--	--	--
College Prep	RP	5	18.5	2	14.3	38	76.0	25	92.6	42	85.7	34	81.0	30	71.4	7	43.7	7	41.1	15	55.6
	CG	13	52.0	7	30.4	72	72.0	61	82.4	43	81.1	65	78.3	51	72.9	8	44.4	--	--	--	--
Other	RP	--	--	--	--	1	2.0	--	--	2	4.1	1	2.4	2	4.8	--	--	--	--	--	--
	CG	--	--	--	--	5	5.0	--	--	1	1.9	1	1.2	2	2.9	--	--	--	--	--	--
No Answer	RP	--	--	--	--	1	2.0	--	--	--	--	--	--	--	--	--	--	2	11.8	2	7.4
	CG	--	--	1	4.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Students	RP	27	100.0	14	100.0	50	100.0	27	100.0	49	100.0	42	100.0	42	100.0	16	100.0	17	100.0	27	100.0
	CG	25	100.0	23	100.0	100	100.0	74	100.0	53	100.0	83	100.0	70	100.0	18	100.0				
I.Q.																					
90-100	RP	--	--	--	--	8	16.0	14	51.9	10	20.5	10	23.8	15	35.7	2	12.5	--	--	--	--
	CG	--	--	--	--	24	24.0	21	28.4	14	26.4	25	30.2	17	24.3	3	16.7	--	--	--	--
101-110	RP	--	--	--	--	24	48.0	6	22.2	20	40.8	17	40.5	10	23.8	2	12.5	--	--	--	--
	CG	--	--	--	--	45	45.0	26	35.2	31	58.5	43	51.8	22	31.4	3	16.7	--	--	--	--
111-over	RP	--	--	--	--	18	36.0	7	25.9	19	38.7	14	33.3	9	21.5	5	31.3	--	--	--	--
	CG	--	--	--	--	28	28.0	24	32.4	5	9.4	10	12.0	27	38.6	6	33.3	--	--	--	--
None available	RP	--	--	--	--	--	--	--	--	--	--	1	2.4	8	19.0	7	43.7	--	--	--	--
	CG	--	--	--	--	3	3.0	3	4.0	3	5.7	5	6.0	4	5.7	6	33.3	--	--	--	--
Total Students	RP	--	--	--	--	50	100.0	27	100.0	49	100.0	42	100.0	42	100.0	16	100.0				
	CG	--	--	--	--	100	100.0	74	100.0	53	100.0	83	100.0	70	100.0	18	100.0				

* I.Q. data not readily available.
† As reported by students on questionnaire survey.

Table B-2

PERSONAL VIEWS OF RP STUDENTS ABOUT SELECTED ASPECTS OF RP PROGRAM

Schools	Personal Benefits				Degree of Satisfaction				Good Things in RP				Would Take RP Again				Summary Index	
	Juniors		Seniors		Juniors		Seniors		Juniors		Seniors		Juniors		Seniors		Juniors	Seniors
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	%	%
De Anza	21	81%	21	84%	21	81%	23	92%	24	92%	22	88%	20	77%	17	68%	83%	83%
El Cerrito	5	36	2	15	6	43	1	8	4	29	7	54	5	36	1	8	36	21
Harry Ells	20	83	22	88	20	83	24	96	21	88	21	84	16	67	24	96	80	91
Richmond	4	16	14	88	10	40	14	88	9	36	15	94	12	48	14	88	35	90
Pacific	14	61	13	68	15	65	15	79	14	61	15	79	16	70	14	74	64	75
Cubberley	8	50	7	64	13	81	9	82	12	75	8	73	12	75	7	64	70	71
Palo Alto	12	86			12	86			13	93			8	57			80	
San Lorenzo Valley PT	13	81			14	88			14	88			12	75			83	
San Lorenzo Valley MDSE	10	59			14	82			11	65			14	82			72	
Watsonville	21	78			16	59			24	89			18	67			73	

Table B-3

RP STUDENTS' VIEWS ON BEST THING IN RP PROGRAM

	Total		Cubberley		Palo Alto		De Anza		El Cerrito		Harry Ells		Richmond		Pacific		SLV PreTech		SLV MDSE		Watson-ville HOPE	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Best Aspect																						
Preparation for the future	11	4.7%	--	--	--	--	4	8.7%	--	--	2	4.8%	3	12.5%	1	3.4%	1	7.1%	--	--	--	--
RP classes (e.g., content, organization, pace)	88	37.6	6	30.0%	4	30.8%	15	32.6	8	72.7%	18	42.9	10	41.7	14	48.3	5	35.7	3	27.3%	5	20.8%
Teacher behavior (e.g., better teachers)	52	22.2	7	35.0	5	38.5	8	17.4	2	18.2	6	14.3	6	25.0	3	10.3	4	28.6	4	36.4	7	29.2
Group identity (e.g., know classmates better)	14	6.0	3	15.0	--	--	3	6.5	--	--	4	9.5	1	4.2	2	6.9	--	--	--	--	1	4.2
Interrelated courses	33	14.1	--	--	--	--	9	19.6	--	--	8	19.0	3	12.5	9	31.0	1	7.1	1	9.1	2	8.3
Technical orientation of courses	1	0.4	--	--	--	--	--	--	--	--	--	--	1	4.2	--	--	--	--	--	--	--	--
Field trips	9	3.8	1	5.0	--	--	--	--	--	--	1	2.4	--	--	--	--	--	--	2	18.2	5	20.8
Don't know	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
No answer	5	2.1	2	10.0	--	--	--	--	--	--	1	2.4	--	--	--	--	1	7.1	--	--	1	4.2
Other	21	9.0	1	5.0	4	30.8	7	15.2	1	9.1	2	4.8	--	--	--	--	2	14.3	1	9.1	[illegible]	12.5

Table B-4

RP STUDENTS' VIEWS ON HOW RP TEACHERS DIFFER FROM OTHER TEACHERS

	Total		Cubberley		Palo Alto		De Anza		El Cerrito		Harry Ells		Richmond		Pacific		SLV PreTech		SLV MDSE		Watson-ville HOPE	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
How RP Teachers Are Different																						
Teachers work together	70	32.0%	4	23.5%	3	25.0%	19	43.2%	--	--	13	34.2%	6	26.1%	8	34.8%	5	35.7%	1	6.7%	11	55.0%
Teachers make classes better (e.g., content organization)	15	6.8	--	--	--	--	4	9.1	2	15.4	2	5.3	4	17.4	2	8.7	1	7.1	--	--	--	--
Teachers explain things better	29	13.2	5	29.4	1	8.3	4	9.1	--	--	3	7.9	6	26.1	1	4.3	4	28.6	4	26.7	1	5.0
More interested in students	65	29.7	6	35.3	8	66.0	11	25.0	2	15.4	15	39.5	4	17.4	6	26.1	3	21.4	7	46.7	3	15.0
Other	32	14.6	2	11.8	--	--	4	9.0	5	38.5	4	10.5	3	12.0	6	26.0	--	--	3	20.0	5	25.0
Don't know	1	0.5	--	--	--	--	--	--	--	--	1	2.6	--	--	--	--	--	--	--	--	--	--
No answer	7	3.2	--	--	--	--	2	4.5	4	30.8	--	--	--	--	--	--	1	7.1	--	--	--	--

Table B-4

RP STUDENTS' VIEWS ON HOW RP TEACHERS DIFFER FROM OTHER TEACHERS

	Total		Cubberley		Palo Alto		De Anza		El Cerrito		Harry Ells		Richmond		Pacific		SLV PreTech		SLV MDSE		Watson-ville HOPE	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
How RP Teachers Are Different																						
Teachers work together	70	32.0%	4	23.5%	3	25.0%	19	43.2%	--	--	13	34.2%	6	26.1%	8	34.8%	5	35.7%	1	6.7%	11	55.0%
Teachers make classes better (e.g., content organization)	15	6.8	--	--	--	--	4	9.1	2	15.4	2	5.3	4	17.4	2	8.7	1	7.1	--	--	--	--
Teachers explain things better	29	13.2	5	29.4	1	8.3	4	9.1	--	--	3	7.9	6	26.1	1	4.3	4	28.6	4	26.7	1	5.0
More interested in students	65	29.7	6	35.3	8	66.0	11	25.0	2	15.4	15	39.5	4	17.4	6	26.1	3	21.4	7	46.7	3	15.0
Other	32	14.6	2	11.8	--	--	4	9.0	5	38.5	4	10.5	3	12.0	6	26.0	--	--	3	20.0	5	25.0
Don't know	1	0.5	--	--	--	--	--	--	--	--	1	2.6	--	--	--	--	--	--	--	--	--	--
No answer	7	3.2	--	--	--	--	2	4.5	4	30.8	--	--	--	--	--	--	1	7.1	--	--	--	--

Table B-5

RP AND CG STUDENTS' PERCEIVED POSITIVE CHANGES IN PROGRAM GOALS FROM SOPHOMORE TO JUNIOR YEAR, BY SCHOOL

School	Classes Related				Interest of Teacher				Individual Help from Teachers				Relation of High School to Future			
	Richmond Plan		Comparison Group		Richmond Plan		Comparison Group		Richmond Plan		Comparison Group		Richmond Plan		Comparison Group	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Harry Ells	22	96	6	86	16	94	2	33	17	90	4	36	14	82	9	69
De Anza	23	100	13	65	16	94	16	67	18	100	10	59	22	100	16	67
Richmond	19	100	12	63	7	58	8	53	9	60	13	59	16	80	15	71
El Cerrito	11	100	9	82	5	100	6	67	5	100	5	42	10	100	13	93
Pacific	20	91	13	93	10	91	7	78	6	67	12	75	11	79	9	75
Cubberley	14	93	3	75	8	89	7	100	8	80	13	100	9	82	5	83
Palo Alto	14	100	6	75	12	92	3	50	13	100	3	50	10	91	6	67
San Lorenzo Valley PT	14	93	4	67	14	93	5	56	10	100	3	60	15	100	7	58
San Lorenzo Valley MDSE*	17	100			16	100			15	100			11	73		
Watsonville*	24	96			19	95			17	100			20	91		

* No CG data.

Table B-6

RP AND CG STUDENTS' PERCEIVED POSITIVE CHANGES IN PROGRAM GOALS FROM SOPHOMORE TO SENIOR YEAR, BY SCHOOL

School	Classes Related				Interest of Teacher				Individual Help from Teachers				Relation of High School to Future			
	Richmond Plan		Comparison Group		Richmond Plan		Comparison Group		Richmond Plan		Comparison Group		Richmond Plan		Comparison Group	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Harry Ells	24	96	13	87	18	100	8	73	16	89	13	77	18	95	14	88
De Anza	23	96	16	94	17	85	10	50	17	85	12	57	14	74	26	90
Richmond	13	87	10	83	9	82	9	90	9	75	12	86	8	80	16	84
El Cerrito	10	100	7	58	4	100	10	71	8	89	10	56	6	75	18	75
Pacific	16	94	9	60	10	91	2	25	9	90	5	50	11	79	5	50
Cubberley	9	100	1	50	8	89	2	67	8	100	4	80	7	100	3	75

Table B-7

RP AND CG STUDENTS' PERCEIVED POSITIVE PERSONAL CHANGES FROM SOPHOMORE TO JUNIOR YEAR, BY SCHOOL

School	Spoke Out in Class				Self Confidence				Effort To Be a Good Student				Effort Devoted to Study				Enjoyment of School			
	Richmond Plan		Comparison Group		Richmond Plan		Comparison Group		Richmond Plan		Comparison Group		Richmond Plan		Comparison Group		Richmond Plan		Comparison Group	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Harry Ells	13	87	6	86	10	91	7	100	9	82	8	80	7	78	4	33	13	68	7	64
De Anza	13	81	13	65	14	88	11	73	12	92	9	60	16	100	10	67	16	94	17	65
Richmond	8	73	14	88	6	50	18	69	9	82	19	70	9	82	16	62	5	42	18	53
El Cerrito	6	86	7	64	7	70	10	83	9	90	5	56	4	57	7	64	7	88	9	60
Pacific	7	70	9	56	7	88	6	67	6	75	10	71	9	90	7	50	6	55	10	56
Cubberley	9	90	6	75	5	71	8	89	9	82	5	83	6	75	4	50	10	83	4	67
Palo Alto	9	90	6	54	7	100	7	70	8	89	5	56	7	70	4	57	10	83	7	50
San Lorenzo Valley PT	11	85	2	40	8	80	6	86	10	83	2	29	10	91	1	14	13	87	3	25
San Lorenzo Valley MDSE*	7	88			9	100			6	86			7	88			10	77	13	68
Watsonville*	11	85			12	92			12	86			12	80			13	68		

* No CG data.

Table B-8

RP AND CG STUDENTS' PERCEIVED POSITIVE PERSONAL CHANGES FROM SOPHOMORE TO SENIOR YEAR, BY SCHOOL

School	Spoke Out in Class				Self Confidence				Effort To Be a Good Student				Effort Devoted to Study				Enjoyment of School			
	Richmond Plan		Comparison Group		Richmond Plan		Comparison Group		Richmond Plan		Comparison Group		Richmond Plan		Comparison Group		Richmond Plan		Comparison Group	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Harry Ells	15	75	11	65	11	79	14	88	8	50	6	55	9	69	6	35	12	71	10	50
De Anza	15	79	12	75	12	80	16	76	12	71	7	47	13	72	9	41	13	62	18	56
Richmond	9	82	10	100	7	78	14	88	7	64	9	75	5	56	9	60	7	88	17	77
El Cerrito	3	75	11	73	3	50	13	87	1	17	11	55	3	43	5	21	2	33	16	53
Pacific	7	78	7	70	8	73	16	84	5	56	5	39	3	33	5	36	10	71	10	56
Cubberley	6	100	5	100	4	67	3	75	8	89	3	100	5	71	1	100	9	90	3	60

Table B-9

POSITIVE CHANGE IN GRADES AND ATTENDANCE FROM SOPHOMORE TO JUNIOR YEAR FOR RP AND CG JUNIORS

School	Grade Point Average				Attendance			
	Richmond Plan		Comparison Group		Richmond Plan		Comparison Group	
	No.	%	No.	%	No.	%	No.	%
De Anza	16	89%	22	56%	9	52%	21	58%
El Cerrito	7	100	11	58	2	40	8	33
Harry Ells	8	67	9	64	11	65	6	46
Richmond	8	50	24	62	10	63	18	50
Pacific	9	75	9	45	7	54	12	55
Cubberley	11	92	7	78	3	33	7	70
Palo Alto	6	75	12	80	7	64	8	42
San Lorenzo Valley PT	7	100	1	17	5	83	2	29

Table B-10

POSITIVE CHANGE IN GRADES AND ATTENDANCE FROM SOPHOMORE TO SENIOR YEAR FOR RP AND CG SENIORS

School	Grade Point Average				Attendance			
	Richmond Plan		Comparison Group		Richmond Plan		Comparison Group	
	No.	%	No.	%	No	%	No.	%
De Anza	13	87%	21	66%	5	29%	9	26%
El Cerrito	4	50	20	71			6	20
Harry Ells	15	71	17	71	2	12	5	18
Richmond	9	75	13	59	5	50	13	45
Pacific	12	100	11	69	6	38	10	44
Cubberley	11	100	4	80	7	88	2	40

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ABSTRACT

This study was a preliminary evaluation of the Richmond Plan, an experimental secondary school curriculum designed primarily to renew the interest of average students in learning. The objectives of the study were to evaluate the effectiveness of the programs and to develop administrative guidelines for schools interested in introducing Richmond-type programs. The evaluation was made in 10 northern California schools. The methods used included intensive case studies, personal interviews, questionnaire surveys, and statistical analyses. The findings indicate wide variation in effectiveness of the program: several schools seem highly successful but several others are ineffective. The bulk of the evidence suggests that a Richmond Plan program that is properly planned, organized, and operated can provide substantially improved educational experiences for average high school students. The evidence also suggests that the Richmond Plan can help to create a climate conducive to change and experimentation in a school. Introducing a Richmond-type program involves several major problems, the most important of which are (1) the second-rate status often attached to the program; (2) the drastic departure from traditional school operations (e.g., student selection, teacher interaction, counselor participation): and (3) cost. Administrative guidelines for introducing this program are suggested. Recommendations are made concerning modifications of the Richmond programs.

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